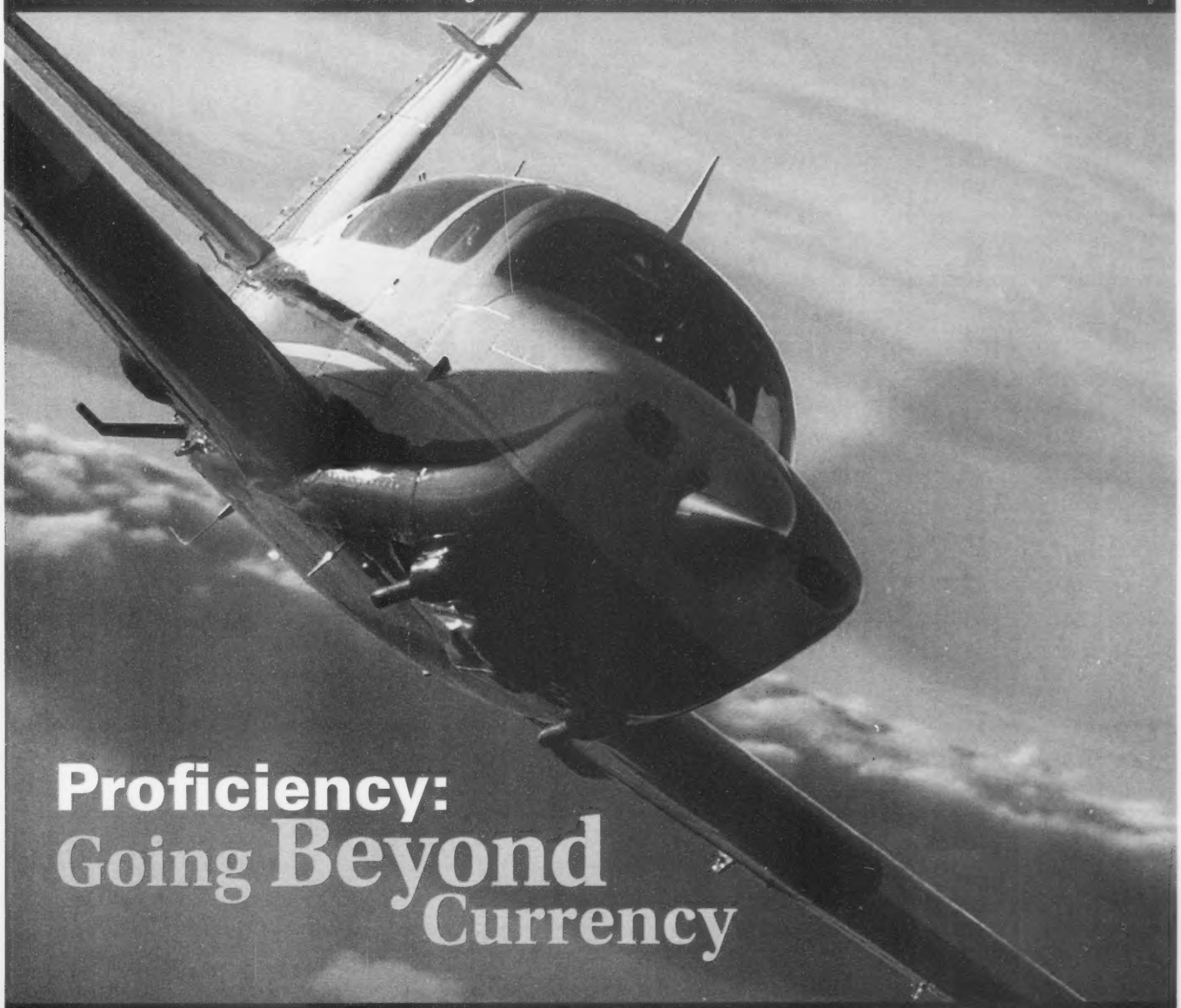
FAA Safety BRIEFING

September/October 2010

Your source for general aviation news and information



Proficiency: Going Beyond Currency

Federal Aviation Administration

www.faa.gov/news/safety_briefing

In this issue we focus on proficiency and its absolute importance for pilots and aviation maintenance technicians. We provide tips on developing your personal improvement plan, address getting back to flying after an absence, give suggestions on how AMTs can keep their edge, talk about the complicated subject of receiving compensation for your flying, and more.

Photo courtesy of Mooney Airplane Company

Features

PRACTICE MAKES PROFICIENT

Tips on getting better with every flight 7

BY SUSAN PARSON

COME FLY WITH ME...

What to know before offering your piloting skills to the public 12

BY PAUL GREER

READY FOR THE SOUP?

Tips on maintaining IFR proficiency 17

BY SUSAN PARSON

GETTING BACK IN THE GAME

Suggestions on how to return to flying after an absence 20

BY TOM HOFFMANN

PUTTING IT ALL TOGETHER

Planning your next cross-country flight 24

BY JAMES WILLIAMS

THE NEED FOR SPEED

The importance of measuring speed 29

BY JASON BRYS

Departments

Jumpseat 1

ATIS – Aviation News Roundup 2

Aeromedical Advisory 5

Ask Medical Certification 6

Checklist 11

Vertically Speaking 16

Nuts, Bolts, and Electrons 27

Hot Spots 32

Flight Forum 35

Editor's Runway 36

FAA Faces . . . . . *Inside Back Cover*

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Jumpseat

JOHN M. ALLEN
DIRECTOR, FLIGHT STANDARDS SERVICE

Proficiency is Personal

Last year on this page, I wrote, "In Praise of Flight Instructors" and mentioned one of my first flight instructors. Lt. Col. Richard Vanslambrook instilled in me the absolute importance of discipline and professionalism. I mention my instructor again because the values he conveyed are that important. Lt. Col. Vanslambrook's lessons of striving for total professionalism in every aspect of airmanship have everything to do with this issue's proficiency theme.

In aviation, we hear a lot about proficiency and about the difference between being current and being proficient. Currency means you meet the letter of the regulations. Proficiency helps keep you and others alive.

It's that simple. Yet, it's also that difficult. This is because proficiency is more than a mastery of skills and being prepared to handle a host of situations. Proficiency is a way of thinking; it is a way of behaving. Most important, being proficient is a responsibility.

Flying is a privilege. Each one of us has the responsibility to ensure we can fly safely every time we climb into a cockpit. This applies across the aviation community. We must be proficient whether we fly full time for a living, whether we fly part time for enjoyment, or whether we work for the FAA and oversee others who fly. I stay current. Also, in the Flight Standards Service we require that all of our operations inspectors validate their flying proficiency before we hire them. Then, they must maintain their flying currency.

Recently, I was at Hangar 6 at DCA and saw the FAA Cessna *Citation* taxi in. In the left seat was Administrator Randy Babbitt working on his proficiency as he returned to Washington on a business trip. Now, if there's someone with an armload of excuses for being too busy to stay proficient—meetings, commitments, memos and papers to read—he's the guy. Yet, as leader of the federal agency whose mission is to provide the safest, most efficient aerospace system in the world, it's important that he know the National Airspace System "up close and personal." What a plus that our administrator sets such a great example of high airmanship standards.

I reserve the highest expectations for instructors, check airmen, and examiners. These individuals serve as role models and as leaders in conveying a culture of professionalism and safety. If you are in a position of teaching and evaluating airmen, there are no excuses for not striving for—and meeting—the highest standards.

There are lots of ways to work on proficiency. The best tactic, of course, is flying, especially with an instructor. Reading is good. There are FAA handbooks (http://www.faa.gov/library/manuals/aviation/), many other resources, and, perhaps, your worn copy of the classic *Stick and Rudder*. Talking with pilots—particularly those who know the local area—is useful. Online courses are good, such as the ones on www.FAASafety.gov and on the AOPA Air Safety Foundation Web site (www.AOPA.org/asf/). Participating in FAA's WINGS pilot proficiency program is a great way to challenge yourself and expand your knowledge, especially during the long winter months. In addition, flight training devices are getting better and better.

Never become complacent if you defy gravity.

Those are the tools. Yet, proficiency is personal and highly individual. Some pilots require more practice. Others need to understand more about the "what" and "why" of aerodynamics. Also, we all have different learning styles.

Every airman should take proficiency seriously and be introspective. Figure out what you need, how to get it, and do it. Then, do it again and again. Never become complacent if you defy gravity.

No More Waiting for Line Up and Wait

Effective September 30, 2010, the familiar ATC instruction "taxi in position and hold" will no longer be used. Instead, expect to hear "line up and wait" when ATC issues an instruction for a pilot to taxi onto a departure runway and wait for takeoff clearance. The change is to help simplify and standardize ATC phraseology, as well as to comply with International Civil Aviation Organization (ICAO) standards. The phrase, both in its current and future form, is used when takeoff clearance cannot immediately be issued, either because of traffic or other reasons.

Why "line up and wait?" The phrase has been in use by a majority of ICAO contracting states for many years. It has proven useful with many non-native English speakers who can sometimes confuse "position and hold" with similar-sounding phrases like "position and roll," "position at hold," or "hold position." Misinterpretation of this instruction can have serious consequences. Using "line up and wait" helps avoid ambiguity and keeps the global aviation community accountable to the same standard.

Additional details will be communicated via updates to the *Aeronautical Information Manual* (AIM) and *Pilot/Controller Glossary*, both located under the Air Traffic section of www.faa.gov.

Other changes to the standard ATC lexicon include air traffic controllers no longer using the term "taxi to" when authorizing an aircraft to taxi to an assigned takeoff runway. Effective June 30, 2010, controllers must issue explicit clearances to pilots crossing any runway (active/inactive or closed) along the taxi route. In addition, pilots crossing multiple runways must be past the first runway they are cleared to cross before controllers can issue the next runway-crossing clearance.

FAA Recommends Pilots/AMTs Report Glass-Cockpit Malfunctions

In a recent study, NTSB found that many instances of glass-cockpit avionics malfunctions went unreported and did not result in any service difficulty reports (SDR). To stress how important it is for operators and AMTs to report these malfunctions, on June 17, 2010, FAA issued Information for Operators (InFO) bulletin 10007. The bulletin said, "Identification of service difficulties, equipment malfunctions, abnormal operations, and other safety issues will be increasingly important as light aircraft avionics systems continue to increase in complexity and variation of design." FAA recommends pilots and AMTs voluntarily report equipment failures, abnormalities, and other safety issues associated with glass-cockpit systems on the FAA's SDR site at http://av-info.faa.gov/sdrx/Default.aspx. For more information, go to http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2010/InFO10007.pdf.

Off to the Races

With fall just around the corner, it's time to start thinking about cooler weather and the upcoming holidays. For those with aviation in their blood, it's also a time for world-class air racing and hot-air excitement. Mark your calendars: The National Championship Air Races and Air Show in Reno, Nevada (September 15-19), and the Albuquerque International Balloon Fiesta in Albuquerque, New Mexico (October 2-10). Both events offer opportunities to witness precision airmanship at its best.

This year's theme for the Reno Air Races is "The Next Generation," a tribute to the rise of new competitors, new aircraft, and new speed records. Talking about speed—some of the aircraft at Reno race at speeds of more than 500 mph—the fastest-moving machines in motor sports. Contrast that with the much slower, but graceful, operations of hot-air and gas balloons at Balloon Fiesta and you see the wide range of experience aviation offers to all.

The FAA conducts surveillance and sets high operational and regulatory standards to ensure the safety of both pilots and spectators at these events.

For more information, see www.airrace.org and www.balloonfiesta.com.

FAA Makes Restriction Changes to DC Special Flight Rules Area (SFRA)

Beginning September 1, 2010, there are a few changes to the restrictions that govern the DC SFRA. Among the most significant changes are those that affect pilots who lose radio contact with controllers while flying VFR after departing from an airport located within the SFRA (a circle of airspace extending 30 miles out from DCA). Under the current rules, those pilots must squawk 7600 on their transponders and immediately leave the SFRA by the most direct route. The new rule will allow pilots to return to their departure airport if it is closer than the SFRA boundary. Pilots who lose radio contact after departing from an airport located within the Flight Restricted Zone (FRZ)—an inner ring extending 15 miles out from DCA—may return to that airport if it is within 5 nautical miles. If neither condition applies, pilots must leave the SFRA by the most direct route.

To improve safety, the FAA added a speed limit of 180 knots within the SFRA for aircraft flying VFR. This complements the existing 230-knot speed limit for aircraft flying VFR in airspace extending 30 miles beyond the outer ring of the SFRA. The agency made several clarifications to make it easier for pilots to file flight plans and understand radio requirements. The FAA added a phone number (866-225-7410) for pilots to call to file flight plans for the FRZ. Pilots will be asked to use their confidential pilot identification codes or their waiver numbers.

The FAA also clarified that aircraft flying within the SFRA must be equipped with a functioning two-way radio capable of communicating with controllers on the appropriate frequencies or UNICOM. The agency strongly recommends pilots continuously monitor VHF frequency 121.5 or UHF frequency 243.0 for emergency instructions while flying in the SFRA .

For more information, search NOTAMs 0/9477 and 0/9463 on http://tfr.faa.gov. The online DC SFRA Awareness Training course atwww.FAASafety.gov is scheduled to be updated with these new changes by September 1.

Makeover for Navigation Chart Covers

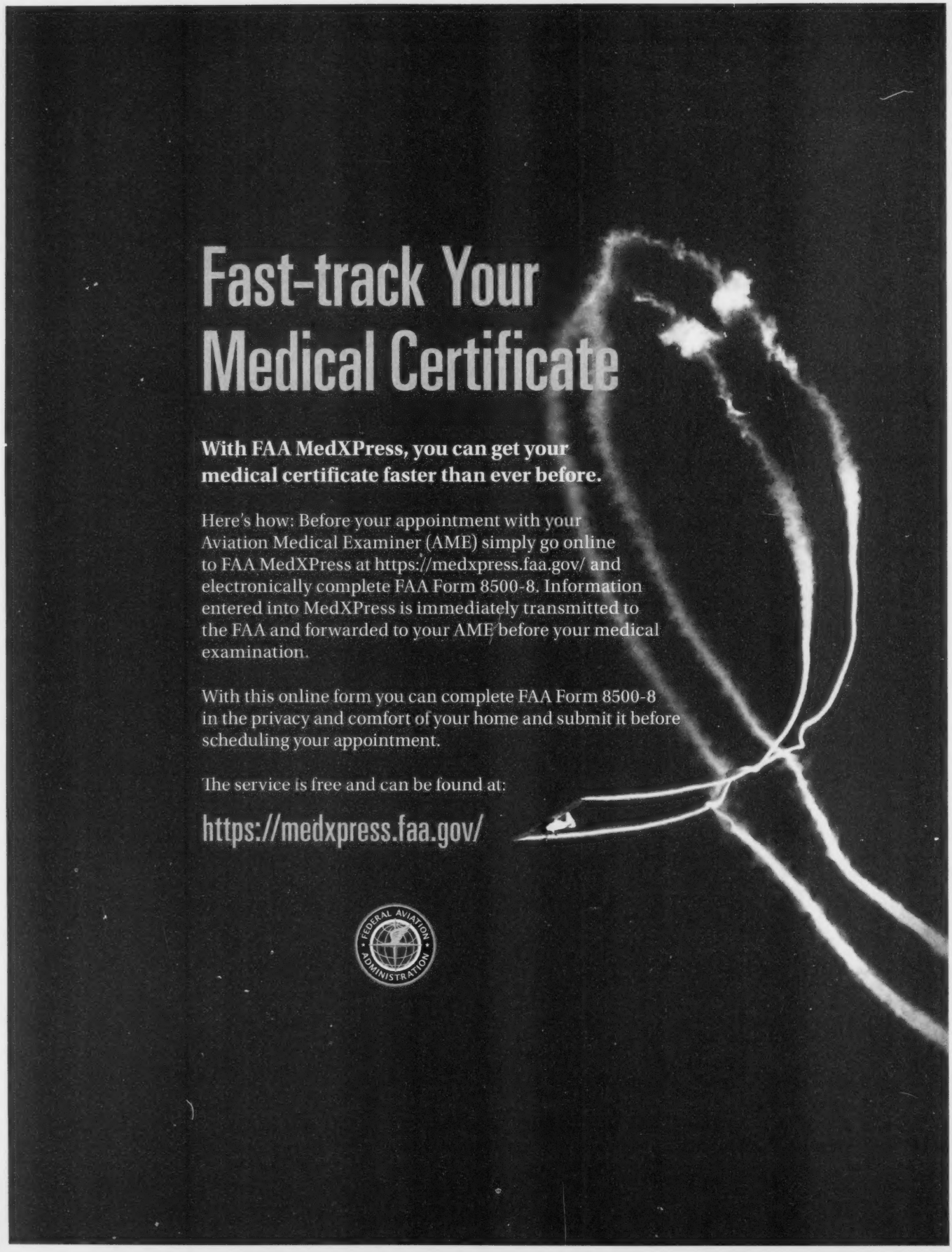
Beginning in September 2010, you may notice something different on your new FAA navigation charts. To provide a cleaner and more colorful look while complying with branding guidelines, FAA National Aeronautical Services (AeroNav Services) is redesigning covers of its charts and publications.

The first products to receive cover redesigns were the Airport/Facility Directories, Alaska Chart Supplement, and the Pacific Chart Supplement, which were implemented for the July 29, 2010 editions. The VFR Sectional Aeronautical Charts, World Aeronautical Charts, Terminal Area Charts, Enroute Low Altitude Charts, Enroute High Altitude Charts, and the U.S. Terminal Procedures Publications cover redesigns will be implemented for the September 23, 2010 editions.

It's only the covers that are changing. Everything else remains the same. For more information, go to: http://avn.faa.gov/index.asp?xml=aeronav/safety_alerts. Pilots may also provide feedback on the new covers by e-mailing AeroNav Services at 9-amc-aerochart@faa.gov.

Photo by Mario Toscano

Check out the mass ascension at the Albuquerque International Balloon Fiesta.


Fast-track Your
Medical Certificate
With FAA MedXPress, you can get your medical certificate faster than ever before.
Here's how: Before your appointment with your Aviation Medical Examiner (AME) simply go online to FAA MedXPress at https://medxpress.faa.gov/ and electronically complete FAA Form 8500-8. Information entered into MedXPress is immediately transmitted to the FAA and forwarded to your AME before your medical examination.
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https://medxpress.faa.gov/
FEDERAL AVIATION ADMINISTRATION

FREDERICK E. TILTON, M.D.
FAA FEDERAL AIR SURGEON

Aeromedical Advisory

(Don't Be) Asleep at the Switch

On a daytime flight, a commercial airliner with three crewmembers and 40 passengers flew past its destination airport after both the captain and first officer fell asleep. The pilot awoke and landed safely. NTSB determined the captain's undiagnosed obstructive sleep apnea (OSA) was a factor in this incident.

Not Just an Inconvenience

Apnea is a medical term that means "being without respiration." OSA is characterized as a repetitive upper-airway obstruction during sleep, as a result of narrowing of the respiratory passages.

OSA is recognized as a major contributor to many health-related ailments. According to some estimates, OSA affects 4-7 percent of middle-aged people, most of whom are overweight and have higher deposits of fatty tissue in their respiratory passages. Gravity can cause this tissue to obstruct a person's airway.

Snoring can result when the airway is partially obstructed. With further tissue obstruction of the airway, there may be complete occlusion. Whether the obstruction is partial (hypopnea) or total (apnea), the person struggles to breathe and is aroused from sleep. These sleep interruptions are often unrecognized, even if they occur hundreds of times a night. A real danger is OSA sufferers may not recognize the condition and may only know that they typically wake up feeling sleepy and tired.

Losing sleep is more than an inconvenience. Sound sleep is essential for good health and clear mental and emotional functioning. OSA is also associated with reduced blood-oxygen levels feeding the brain, which, of course, is a major health concern. Repetitive decreases in blood-oxygen levels associated with OSA may eventually increase blood pressure, strain the cardiovascular system, and increase the risk of heart attack or stroke.

The implications for pilots are significant, because people with mild-to-moderate OSA can show performance degradation equivalent to 0.06 to 0.08 percent blood-alcohol levels, which is the measure of legal intoxication in most states.

OSA Symptoms, Diagnosis, and Treatment

Symptoms suggesting OSA include: loud and excessive snoring; difficulty concentrating, thinking, or remembering; daytime sleepiness, fatigue, and the need to take frequent naps; and headaches and irritability.

Once it is diagnosed, obstructive sleep apnea is highly treatable.

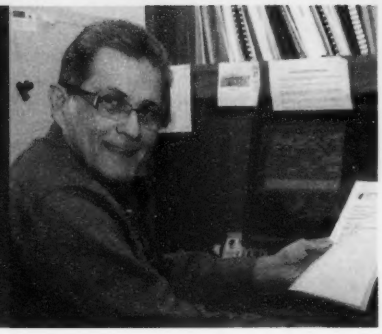
The only way OSA can be diagnosed is through a sleep study. Once diagnosed, OSA is highly treatable, either with surgery or non-surgical approaches. Non-surgical approaches include:

- Making behavioral changes, such as a different sleeping position or environment, and a diet to lower body fat.
- Using dental appliances that thrust the lower jaw forward and open the airway.
- Using a Continuous Positive Airway Pressure (CPAP) machine or Bi-level Positive Airway Pressure (BiPAP) machine. These machines use air pressure to hold tissues open during sleep. The newer machines—and the one required by the FAA—have a computer device that keeps track of the number of hours and days that you are compliant.
- Taking medications approved by the FAA.

Surgical methods can be significant and do not always succeed. They should be used only after non-surgical methods have failed. If you experience one or more symptoms of OSA, consult a physician. OSA treatment has a high success rate and, if your OSA is treatable, you can maintain your airman medical certificate and continue to enjoy aviation.

Dr. Tilton received both an M.S. and a M.D. degree from the University of New Mexico and an M.P.H. from the University of Texas. During a 26-year career with the U.S. Air Force, Dr. Tilton logged more than 4,000 hours as a command pilot and senior flight surgeon flying a variety of aircraft. He currently flies the Cessna Citation 560 XL.

Ask Medical Certification



Dr. Warren Silberman and his staff administer the aeromedical certification program for about 600,000 holders of U.S. pilot certificates and process 450,000 applications each year.

Q: I understand that the U.S. Food and Drug Administration (FDA) is about to approve two new oral drugs—the chemotherapy drug cladribine and the immune-suppressing drug fingolimod—for treatment of multiple sclerosis (MS). What are the prospects for the FAA to approve these drugs, and how soon might they be approved for pilots?

A: MS is a disease that attacks the central nervous system (brain, spinal cord, and optic nerves). It usually occurs in young adults and predominantly females. It affects nerve-cell communication with one another. Cladribine (or trade name Mylinax) was previously used in cancer treatment. While studies have shown it to have positive effects with the relapsing form of MS, it has not received FDA approval.

As for fingolimod, or Gilenia (proposed trade name), it is in an entirely new drug category and was recently approved by the FDA. The FAA Office of Aerospace Medicine has a policy that it does not consider the use of new medications in airmen until the effects of the medication can be observed in the general population for one year. FAA consideration of accepting these medications could not occur until 2011, at the earliest. Also, I must stress that in aerospace medicine it is the medical condition that is the first consideration, then the medication. Only airmen with the mildest form of multiple sclerosis can obtain a medical certificate.

Send your question to SafetyBriefing@faa.gov. We'll forward it to Dr. Silberman without your name and publish the answer in an upcoming issue.

Q: Can I get a medical with Type II insulin-dependent diabetes?

A: Yes, you can. The FAA accepts airmen with this condition for all classes of medical certificates. You must obtain an Authorization for Special Issuance of a Medical Certificate (waiver). This means you will need to obtain information and a blood-test result from your treating physician in order to be considered. You will also need to provide annual status reports and test results as long as you want to hold a medical. While FAA accepts most of the oral blood sugar-reducing medications, you may not be permitted certain combinations of some diabetic medications. You may consult with your AME, Regional Flight Surgeon, or the Aerospace Medical Certification Division about your medication regimen.

For more information, see:
http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/dec_cons/disease_prot/diabetes_med/

Q: Will a liver transplant prevent me from obtaining a medical?

A: Liver transplants are acceptable for medical certification. Obtaining medical certification will require an Authorization for Special Issuance of a Medical Certificate. In issuing the waiver, FAA's concern is understanding what caused the liver failure. The FAA will want your AME to provide documentation on why the liver failed, when the surgery occurred, and will also need a copy of the operative and pathology reports as well as current status. The pilot will need to have adequately recovered from the surgery and stabilized on the post-surgical medication regimen, which is generally six months. The FAA accepts most of the immunosuppressive (organ-rejection) medications.

For more information, see:
http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item38/amd/conditions/

Warren Silberman, D.O., M.P.H., manager of FAA's Aerospace Medical Certification Division, joined FAA in 1997 after a career in the U.S. Army Medical Corps. Dr. Silberman is Board Certified in Internal Medical and Preventive/Aerospace Medicine. A private pilot with instrument and multi-engine ratings, he holds a third-class medical certificate.

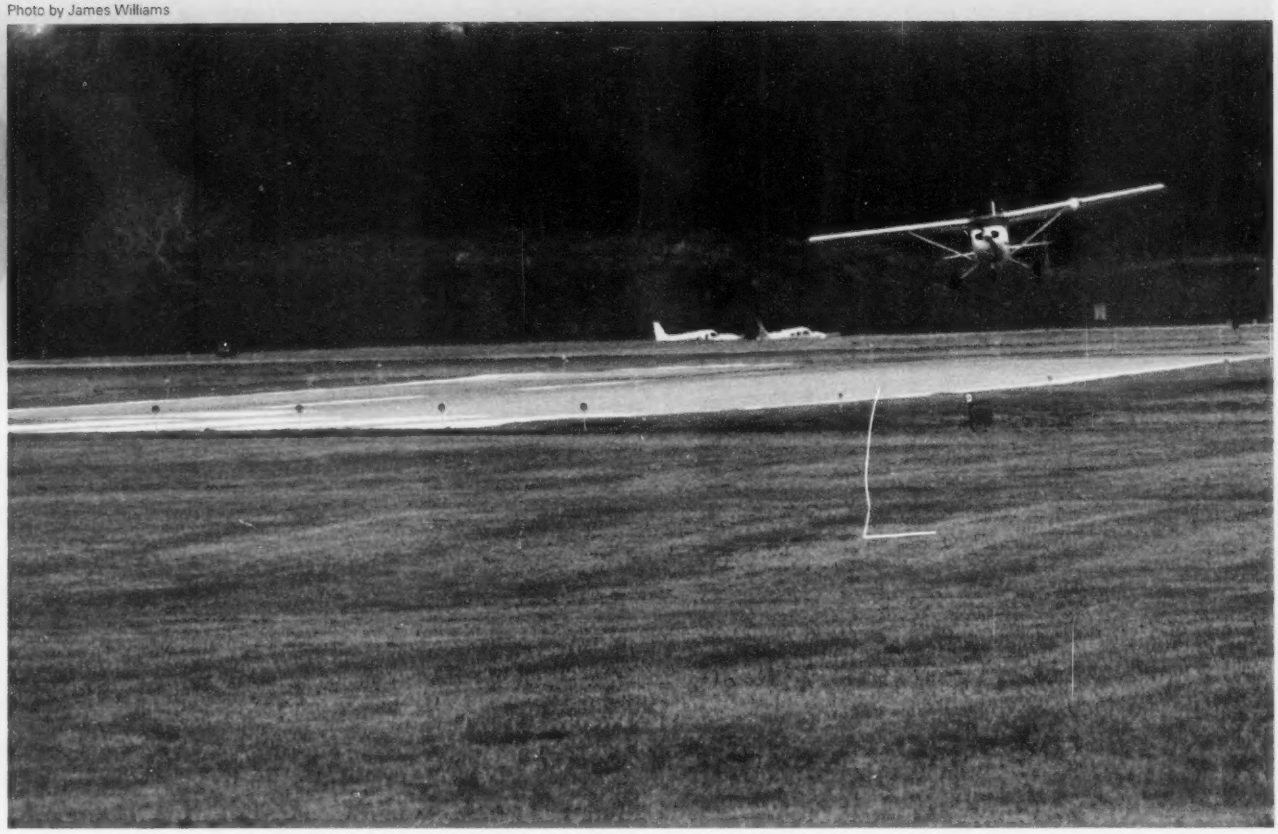
Photo by James Williams

Practice makes Proficient

BY SUSAN PARSON

In his 2008 book, *Outliers: The Story of Success*, author Malcolm Gladwell ponders the characteristics that put some people head and shoulders above the rest of the pack in their chosen field. Threaded throughout are references to what Gladwell calls the 10,000-Hour Rule. Based on a study by Florida State University professor Anders Ericsson, this "rule" holds that success in a given activity is based not so much on talent, but rather on practice...*lots* of practice. If you care to do the math, 10,000 hours of practice equates to something along the lines of 20 hours of practice per week for 10 years.

Photo by James Williams



Wow. As much as we might like to do so, most general aviation pilots have neither the time nor the resources to devote 20 hours a week to flying. On the contrary, many of us spend most of our time at jobs that let us earn money for the level of flying we *can* afford to do after paying for such non-discretionary trifles as food and shelter. So, what is a conscientious pilot to do?

Make It Count

Though somewhat counter to the research giving rise to the 10,000-Hour Rule, the notion that quality counts more than quantity is ingrained in the collective wisdom. There's a good reason for that: Quality *does* matter, and quantity alone does not necessarily result in expertise.

Let's take an aviation example. Generally, pilots need a total of 1,500 hours to qualify for the airline transport pilot (ATP) certificate, and there is a tendency to assume that a pilot with 1,500 hours of flying experience must be a pretty good stick. Yet, what if that pilot accumulated 1,500 hours of visual flight rules (VFR) flying within 35-nautical miles of home base? That pilot might qualify as an expert on VFR operations in that one small area, but you can probably agree that this example illustrates the folly of assuming that a specific quantity of flying time translates automatically to the quality of experience you should expect from a pilot who has attained the "Ph.D." of aviation.

The same logic applies to other certificates and ratings. That's why the regulations governing pilot certification do not simply specify a total number of hours. Rather, the regulations address quality by dividing the total minimum hours required for a given certificate or rating into various categories of aeronautical experience. These typically include cross-country time (with a specific definition of what constitutes cross-country flight), instrument-flying time, and dual-instruction time.

When you are working toward a pilot certificate or rating, especially with a limited budget, you quickly learn to make every hour of your flying time and money count toward your goal. There is no reason you can't use the same make-it-all-count strategy when you are flying "only" for proficiency. A conscientious pilot should always be aiming for greater proficiency, which means assuming a mindset of making every hour count—in other words, imbuing the quantity of all your flying, however limited, with quality.

Make It Planned

One of the most effective ways to get the most out of your flying time is to make a personal piloting proficiency plan. Just like a flight plan, your personal proficiency plan should be based on a "destination" or goal. When conducting a flight review, I address proficiency planning by asking the pilot two questions:

- What aspect of your flying do you most need to *improve*?
- What do you most want to *achieve* through your flying?

The answers guide not only the flight review, but also the development of an ongoing "aeronautical health plan" for pilot proficiency and skill development. See the links at the end of this article for examples on how to approach this process.

For the first part of your ongoing aeronautical health plan—improvement—the Personal Proficiency Practice Plan in FAA's *Conducting an Effective Flight Review* lists tasks and maneuvers for basic VFR proficiency. Consider devoting at least one flight every 4-6 weeks to flying through this list. If you feel too rusty to try them all on your own, hire a qualified flight instructor to go along for the first flight or two.

The Civil Air Patrol (CAP) also publishes a list of its approved pilot-proficiency profiles. You don't have to be a CAP member to print the list and use it as a guide to developing your personal proficiency plan.

The second part of your ongoing aeronautical health plan is to establish goals you want to achieve as a pilot. The obvious achievement goals are to add a certificate, rating, or endorsement for a new operating privilege, e.g., tailwheel, to your qualifications. Consider, too, the possibility of specialty training, such as a focused upset/spin recovery course or a few sessions of aerobatic training. You might also set a goal of gaining enough proficiency to lower your personal minimums in one or more of the listed categories.

There is another important item to plan, which is the quantity—the frequency—of your flying. We all get busy, and it is easy to let proficiency flying slide in favor of more pressing things. Having a specific numerical goal of flying "x" number of hours per month can help you stay on track.

Make It Interesting

If you're bored with the basics, branch out! Learning new skills and stretching your wings is an important element of proficiency flying. Also, keeping it interesting and challenging can provide some of the motivation to keep it up once you have your aeronautical health and improvement plan established.

We have already mentioned new certificates, ratings, endorsements, and specialty training as ideas for adding the spice of variety to your proficiency flying. You do not have to be earning the certificate to tackle some of the high-performance maneuvers in the commercial-pilot syllabus. Mastering these maneuvers will enhance your proficiency in precision-aircraft control, energy management, situational awareness, and much more.

Still another idea for making your proficiency flying more interesting is to fly outside the range of your usual practice area. To encourage this kind of flying (as well as visits to its public-use airports), the Virginia Department of Aviation established the Virginia Aviation Ambassadors Program. There are several levels of achievement, but pilots who obtain a "passport stamp" from all 66 of the state's public-use airports and fulfill a few other requirements, e.g., visit aviation museums, attend a safety seminar, and attend the state's annual Festival of Flight, get the top prize along with the satisfaction of being a "gold"-level Virginia Aviation Ambassador. Reaching this level was part of my personal-proficiency plan for this year.

Photo by H. Dean Chambelain

Several states have programs similar to Virginia's, but even if your state doesn't have a formal program, there's no reason you can't include a visit-all-the-state-airports goal in your aeronautical-achievement plan.

Make It Better

Practice makes a proficient pilot, but only if you pay attention, learn from your mistakes, and resolve to do better every time you fly. Perfection may seem to be an unattainable or unrealistic goal, but aiming to be the best will get you a lot farther up the proficiency ladder than settling for "good enough." Getting better with every flight requires you to understand where you fell short on the last one, why it happened, and how you can fix it next time. Persistent (or mysterious) mistakes may need professional intervention in the form of a qualified flight instructor, but you can—and you should—develop your ability to self diagnose the deficiencies that undermine your proficiency.

For tips on how to build this important skill, check out chapter 5 (Assessment) in the FAA *Aviation Instructor's Handbook* (FAA-H-8083-9A). One technique for effective post-flight self assessment includes four distinct steps:

- *Replay* the flight in your mind, taking note of what you did well and what you need to improve.
- *Reconstruct* the maneuvers where you made mistakes, considering what you could have done differently.
- *Reflect* on the most important lesson(s) you learned from this specific flight.
- *Redirect* those lessons to your planning for the next flight.

You may not be able to accumulate 10,000 hours, but a quality-focused approach to every hour you do have in the cockpit can go a long way to making you a better and more proficient pilot.

For More Information

Conducting an Effective Flight Review **– Appendix 8, Personal Proficiency Practice Plan**
www.faa.gov/pilots/training/media/flight_review.pdf

Civil Air Patrol Approved Proficiency Flight Profiles (PROFILE #7)
www.capmembers.com/media/cms/CAPR_601_Profiles_2A62D0A690C1A.pdf

FAA *Aviation Instructor's Handbook* (FAA-H-8083-9A)
www.faa.gov/library/manuals/aviation/aviation_instructors_handbook/media/FAA-H-8083-9A.pdf

Susan Parson (susan.parson@faa.gov) is a Special Assistant in the FAA's Flight Standards Service. She is an active general aviation pilot and flight instructor.

SUSAN PARSON

Checklist

Aeronautical Proficiency Checkups

Though we all gripe about congested airspace and increased security requirements, the truth is that general aviation pilots in this country enjoy an amazing level of flexibility and freedom. Airline, corporate, and military flight operations are all strictly regulated, and each uses a significant degree of internal oversight to ensure compliance.

GA has relatively few of these regulatory encumbrances. As a result, safety depends heavily upon the development and maintenance of each individual pilot's basic skills, systems knowledge, and aeronautical decision-making skills. The ability to maintain our freedom depends on maintaining the proficiency necessary to ensure the safety of our passengers, the public, and ourselves.

Though many pilots regard them as "tests" to be dreaded and survived, the flight review required in 14 CFR section 61.56 and the instrument proficiency check (IPC) required in 14 CFR section 61.57 are both intended to be proficiency checkups for the pilot.

Flight Review Guidance

The flight review provides a regular opportunity to focus on improving your knowledge and skills. It also offers pilots the opportunity to design a personal currency and proficiency program in consultation with a certificated flight instructor (CFI). In effect, the flight review is the aeronautical equivalent of a regular medical checkup and ongoing health-improvement program.

To better accomplish these objectives, the FAA worked with industry to develop an optional guide for conducting an effective flight review. The guide provides tools for helping pilots develop a personalized currency, proficiency, risk management, and "aeronautical health maintenance and improvement" program. A key part of this process is developing risk-management strategies and realistic personal minimums.

Instrument Proficiency Check Guidance

Similarly, FAA worked with industry to develop an optional online guide to conducting the IPC. To ensure the IPC serves its intended purpose, the Practical Test Standards (PTS) for the instrument rating (FAA-S-8081-4E) stipulates that the flight portion of an IPC must include certain aeronautical tasks specific to instrument flying. The online IPC guide offers additional guidance with special emphasis on ground review and on IPCs in aircraft with advanced avionics. The goal is to help the CFI-I determine that a pilot seeking an IPC endorsement has both the knowledge and skills for safe operation in all aspects of instrument flying.

Check Out the Checkups

While intended primarily to assist flight instructors, both the flight review and IPC guidance documents are available to anyone who wants to know what to expect and how to maximize the opportunity to learn. Each includes handouts and worksheets.

You might also consider taking the online flight review prep and/or IPC prep courses available through the online course catalog at www.faasafety.gov. Both are designed to be consistent with the online flight review and IPC guides. They also provide a structured review of the regulations and procedures that a proficient pilot should know.

Susan Parson (susan.parson@faa.gov) is a Special Assistant in the FAA's Flight Standards Service. She is an active general aviation pilot and flight instructor.

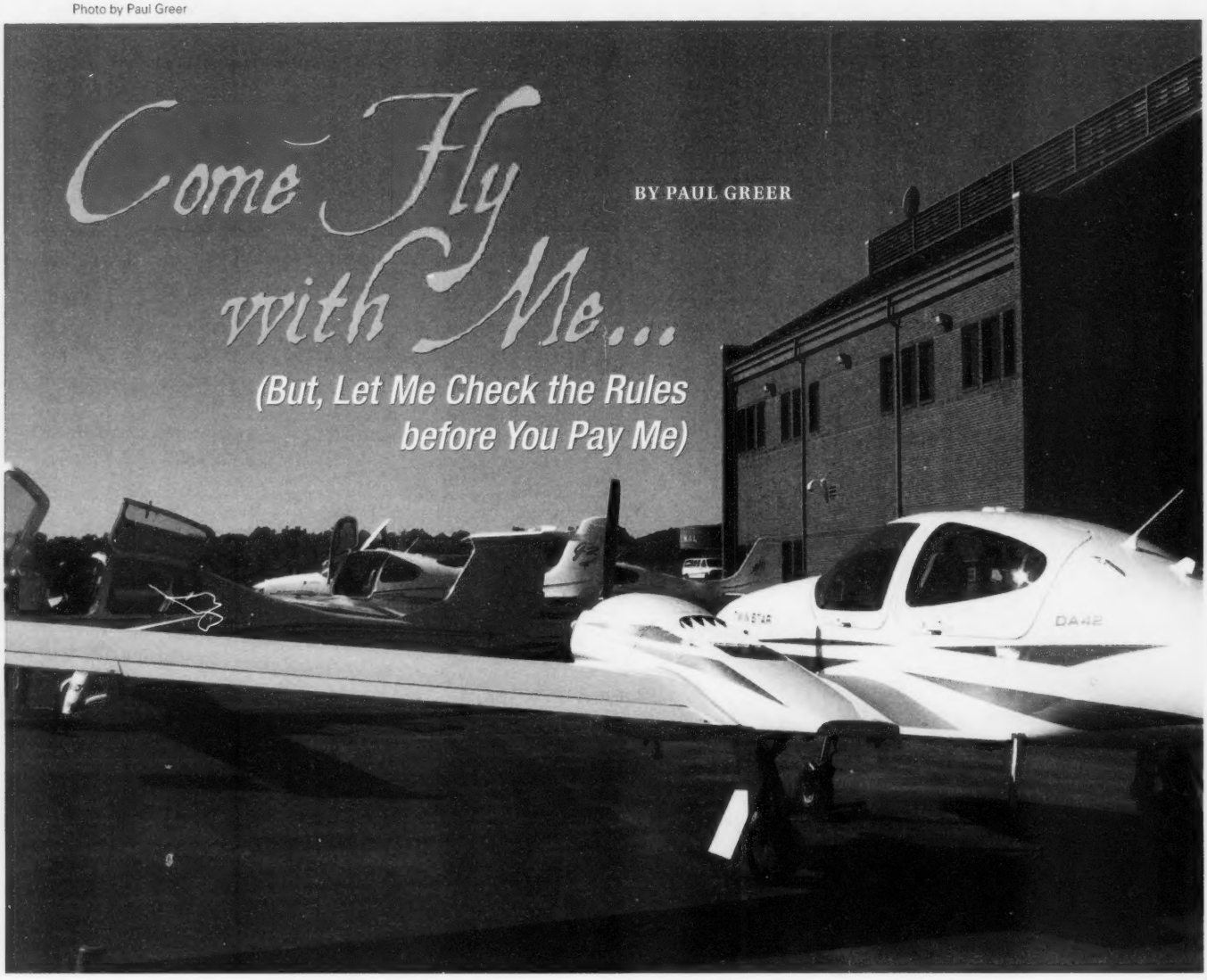
For More Information

Conducting an Effective Flight Review **– Appendix 8, Personal Proficiency Practice Plan**
www.faa.gov/pilots/training/media/flight_review.pdf

Instrument Proficiency Check (IPC) Guidance
www.faa.gov/pilots/training/media/IPC_Guidance.pdf

Aviation Instructor's Handbook **(FAA-H-8083-9A)**
www.faa.gov/library/manuals/aviation/aviation_instructors_handbook/media/FAA-H-8083-9A.pdf

Photo by Paul Greer



Come Fly with Me...

(But, Let Me Check the Rules before You Pay Me)

BY PAUL GREER

You made it! You finally earned your private pilot certificate and now you're ready to really start flying. As Susan Parson discusses in Practice Makes Proficient (page 7), you recognize the need to practice to keep your skills sharp, but you also know that this flying stuff can get pretty expensive. Like most new pilots, you begin to wonder if there's any way to get some help whittling down the cost of staying sharp—and grabbing that $100 hamburger. Perhaps there is, but you need to be careful.

From your training, you remember that a private, sport, or recreational pilot generally can't act as pilot in command of an aircraft carrying passengers or property for compensation or hire. Nor can he or she generally receive compensation for just piloting an aircraft. However, you also seem to remember your flight instructor saying that there are some exceptions to that general rule, but that you should be very cautious if you ever accept anything from anyone for piloting an aircraft.

Wondering what those exceptions are, you take out your well-worn copy of the regulations and quickly notice in part 61 that a sport, recreational, or private pilot may receive some compensation from passengers for a flight. But the pilot must cover at least his or her *pro rata* share of the operating expenses of a flight with passengers—and those operating expenses can only involve fuel, oil, airport expenditures, or rental fees.

Even if you get a tailwind on both legs of a flight and give your friends the "experience of lifetime," you still have to pay for your share of the flight

Photo by Tom Hofmann

regardless of how much your passengers insist that you don't open your wallet. Also, be wary if your passengers try to buy you a fancy dinner or hand you the key to the beach house for the weekend, if the value exceeds their *pro rata* share of the costs for the flight. You also can't receive reimbursement for the shared expenses from someone other than your passengers, such as an employer.

Common Purpose Is Key

Underlying the concept of sharing expenses is the notion that you and your passengers are taking the flight for a "common purpose." You and your passengers must be taking the flight for a common purpose; otherwise, you can't even share the expenses of the flight with them. Whether a *bona fide* common purpose exists, however, depends on the specific facts of the situation. This doesn't mean that you can't ask people to fly with you and share some of the costs, but the sole purpose of your flight can't be just to transport your passengers from one point to another.

Asking your flying buddies if they want to split the costs of flying to Oshkosh with you and flying with friends to that resort on the coast you're all going to share and sharing the flying costs—those would be okay. However, sharing expenses with a passenger on a flight to a place you would not otherwise be flying to would be a problem.

What about business trips?

Looking at section 61.113, you notice that the private pilot certificate allows you to receive compensation for some other activities. You can receive compensation for acting as pilot in command in connection with a business or employment. But, this, too, is a very limited exception. Wading through the details of the regulation, you determine that the flight must be incidental to that business or employment; that is, you can't be in the business of flying and you can't carry passengers or property for compensation or hire. So, you can get paid by your employer when you fly yourself on *Old Bessie* for that occasional business trip, but you can't be paid for taking your co-workers.

Be careful about offering your piloting skills to the public.

It's for charity!

As you delve deeper into section 61.113 and the complexities of flying for compensation or hire as a private pilot, you find out that you can also receive compensation for flying in certain charitable, nonprofit, or community events, and you can be reimbursed. However, both you and the event sponsor must comply with the detailed requirements of section 91.146, which could easily be the subject of another article.

You can also be reimbursed for some expenses when flying in certain sanctioned search-and-location operations. There are provisions for aircraft salesmen and persons who tow gliders or ultralight

Photo by James Williams

vehicles, too. But, let's get back to where we started: saving a few dollars grabbing that hamburger.

Commercial certificate is the cure, right?

By now, you may be starting to wish you had a commercial pilot certificate like that dashing young aviator lurking behind the sunglasses with an eye firmly focused on a seat at a major air carrier. Surely that god/goddess of the sky can really be paid to fly for anything they do. Not so fast, ace! One of the facts that many new commercial pilots don't quite understand is that even though they may have commercial pilot privileges and can be paid to carry passengers or property for compensation or hire, they can't act as an air carrier or commercial operator without also obtaining an operating certificate. A commercial pilot *certificate* does not authorize a person to become a commercial *operator*.

Just because you have a commercial pilot certificate doesn't mean that you can be paid for all of the flying you do.

All of this sounds pretty limiting and, frankly, it is. Basically, when a member of the public provides compensation for your services in piloting an aircraft, the public has an expectation that both the pilot and the operator will meet a standard of competence and provide a level of safety higher than that provided by a private pilot operating solely under the general operating requirements of part 91. In most instances where compensation is provided, the FAA has determined that this level of safety can only be achieved when the operation is conducted by at least a commercial pilot flying under the provisions of an operating certificate.

All pilots need to understand the difference between those operations that can be conducted under the general operating rules of part 91 and those that must be conducted under part 135. Generally, if you're being compensated for providing a service to another person and have "operational control" of the aircraft in which that service is provided, you're going to have to be issued a certificate to conduct that operation under part 135 (or part 121 or 125 if larger aircraft and even more complex operations are involved). So, be particularly careful if you're both the pilot and provider of an aircraft to someone for compensation—and remember the FAA will look at the actual nature of the relationship and not just at any written agreements you may have.

Exceptions Are Limited

There are some exceptions to the general rules requiring the issuance of operating certificates for commercial operations. But again, these exceptions are limited and apply to activities such as flight instruction, certain types of sightseeing flights, and aerial work operations. You can find these exceptions in section 119.1 of part 119, which contains the regulations governing operations for compensation or hire.

Those kinds of operations that require an operating certificate under part 135 typically involve some form of common carriage (holding out to carry persons or property for compensation or hire), however, an operating certificate can also be required for operations involving private carriage (a "limited" holding out to carry persons or property for compensation or hire) and non-common carriage (no holding out involved but persons or property are carried for compensation or hire).

Hold the Line on Holding Out

"Holding out" can be as complex as publishing a flight schedule for a major airline or as simple as posting a notice on an FBO bulletin board (or the Internet) telling everyone you're the one who will fly them to that prime vacation resort and make their dreams come true. Many FAA inspectors also like to fly for pleasure, and they read those bulletin boards, too. They might not be too happy with your advertisement for *Old Bessie*'s "charter service" when they find out you don't have a part 135 certificate, but at least they won't take you to task for promising to make your prospective client's dreams come true.

Many pilots believe that they can easily avoid the compensation or hire restrictions of the regulations by making other arrangements. The FAA, however, interprets "compensation" very broadly. For example, the FAA has long held that logging flight time for the conduct of a flight is compensation. Most of us, and especially those of us seeking that coveted left seat at a major air carrier, know how valuable flight time can be. So, if someone requests that you use your superior piloting skills to take them to that resort of their choice and you decline any monetary payment, but still log that flight time while not paying the costs of operating the aircraft, you've received compensation.

Goodwill obtained from providing a flight has also been determined to be compensation. Everyone knows how valuable a favorable news article or celebrity endorsement can be. Bartering can be considered compensation, too. You may want to think twice before you take someone flying in exchange for spending a weekend at their beach house.

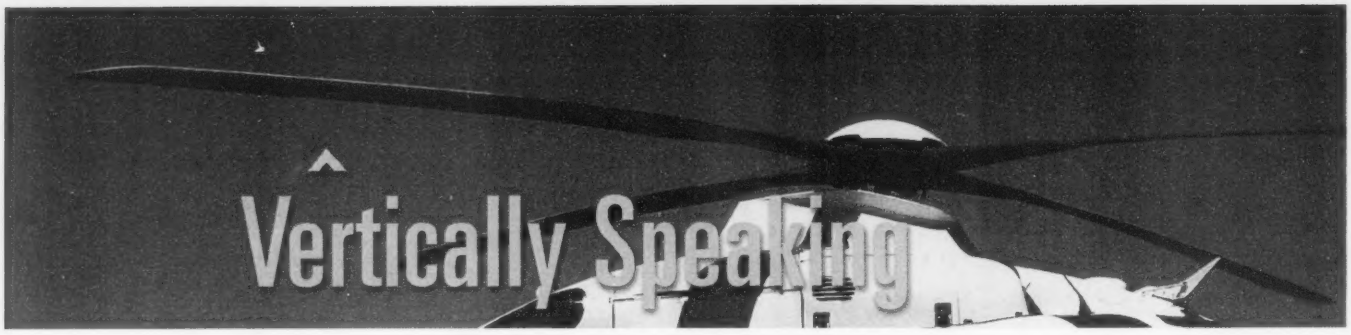
A pilot may also be considered to be conducting a flight for compensation even if someone else receives the compensation for the flight. How would you like to be cited with a violation of the compensation or hire provisions of the regulations and not even receive any payment? Pilots should also be aware that not only will the FAA be unhappy if you conduct a commercial operation without an operating certificate, but if you are involved in an accident or an incident, your insurance company might be able to deny coverage for any claims made against your policy. That's never a good result of trying to get paid to fly.

If delving this deeply into the regulations makes your eyes glaze over, you may want to check out FAA's Web site or call your local FSDO inspector if you have any questions. Importantly, since there are so many variations on the issue of flying for compensation or hire, this article is not a formal legal opinion from the FAA (apologies to all you hangar lawyers). You can, however, search the FAA's legal interpretations in this area at: http://www.faa.gov/about/office_org/headquarters_offices/agc/pol_adjudication/agc200/Interpretations/.

If you still have a question about how the regulations apply to your specific situation, you can make a formal request to the Regulations Division in the FAA's Office of the Chief Counsel in Washington, DC, for a legal opinion. Again, the caution is "be careful" if you're going to accept anything for your flying.

Flying and getting paid for it has been a dream that most pilots have had at one time or another. It's been done by generations of pilots, but it's also an area ripe with opportunities for new (and even older) pilots to run afoul of the regulations. In short, before you hang out that "Will Fly for Food" sign please make sure you know the rules.

Paul Greer is an attorney in the FAA Office of the Chief Counsel. He holds commercial pilot and flight instructor certificates. He rarely flies for compensation.



An Ounce of Prevention

Benjamin Franklin, printer, scientist, diplomat, signer of the Declaration of Independence, among his many wise sayings, coined, "An ounce of prevention is worth a pound of cure."

That aphorism perfectly characterizes the work of the International Helicopter Safety Team, or IHST, that Mark Schilling wrote about in the July/August 2010 Vertically Speaking column. That column introduced IHST's work to reduce the worldwide helicopter accident rate by 80 percent by 2016. The approach: Rigorously analyze accident data and then develop mitigations based on the analysis.

The U.S. Joint Helicopter Safety Analysis Team (JHSAT) is the IHST element that analyzes U.S. helicopter accidents. JHSAT includes members from FAA and NASA, helicopter and engine manufacturers, operators, and helicopter associations. The team does not determine probable cause; that's the role of the U.S. National Transportation Safety Board (NTSB). Yet, JHSAT uses the significant amount of information gathered through NTSB investigations to probe deeper than the probable-cause finding. For example, for a helicopter accident earlier this year, NTSB stated the probable cause as: "The pilot's failure to maintain control of the helicopter during takeoff."

That is the probable cause, but, it alone, does not provide the needed information to develop an effective ounce of prevention. That's the point of the JHSAT's work—better understanding the factors that lead to accidents in order to develop the most effective interventions.

Over recent months, JHSAT analyzed 523 helicopter accidents from the NTSB accident docket for U.S.-registered type-certificated helicopters. The product: Thoroughly researched findings on the leading problem areas in U.S. helicopter safety and recommended interventions. It should be no surprise that the analysis affirmed what many already know—the biggest safety challenge is addressing "pilot judgment and actions."

The judgment of a pilot is often the initiating event in the accident sequence and comes into play in all phases of flight. One of the first questions is whether the preflight planning was sufficient? Did the pilot adequately consider the enroute weather? At other times, the pilot's incorrect judgment or reaction during flight turns a manageable situation into an accident. For example, an improperly executed autorotation following power loss as well as attempts to fly to the destination airport after a hydraulic system failure, rather than landing at the first suitable area, has led to accidents.

Since the pilot is the single-greatest factor affecting accidents, improving pilot judgment and performance offers the greatest area for improvement. The JHSAT's strongest recommendation was for improved pilot training, specifically for "training on cues critical for safe flight."

While the pilot has the last opportunity to affect a given flight's outcome, the pilot's organization has the first opportunity to affect the safety of all its flights. This involves, of course, the organization's commitment to safety, both in general and in terms of its specific commitment to operate under a Safety Management System (SMS). That's what the JHSAT found to be the second greatest problem area: the lack of an organizational SMS.

An effective SMS incorporates both organizational and individual risk management. For example, an organization with an SMS provides clear guidance on whether a flight occurs or not. An organizational SMS can include standard operating procedures on such topics as weather minimums, crew-rest requirements, landing-zone requirements, and oversight of remote operations. To address this problem area, the IHST provided an SMS toolkit that helicopter operators can use to develop their own SMS.

This is a snapshot of a major work in progress. The JHSAT will continue to analyze what it hopes will be fewer helicopter accidents and provide additional recommendations on prevention strategies.

Jim Grigg, Co-Chair of the Joint Helicopter Safety Analysis Team, is an Aviation Safety Engineer at the FAA Rotorcraft Directorate in Ft. Worth, Texas.

Ready for the Soup?

Tips on Maintaining IFR Proficiency

BY SUSAN PARSON

Photo by James Williams

If asked to list three requirements a pilot must meet to fly in instrument meteorological conditions (IMC) or under instrument flight rules (IFR), most pilots who have earned these qualifications could easily name two. First, it's pretty obvious that the pilot must hold an instrument rating on his or her pilot certificate for the category and class of aircraft to be operated. Since instrument flying skills—like any other skill—are perishable when they aren't used, the second requirement is for the pilot to be instrument current by meeting the requirements stated in Title 14 Code of Federal Regulations (14 CFR) section 61.57.

How about the third requirement? It isn't spelled out in the rules the way that the requirements for instrument rating and instrument-flying currency are, but instrument-flying proficiency is definitely a requirement for flying safely under IFR, especially when you are also operating in IMC.

"Current" vs. "Proficient"

Some will argue that proficiency is included in the regulatory requirement for instrument-flying currency, and I would certainly agree that the goal of IFR-currency requirements is proficiency. However, I part company with those who believe that an IFR pilot who is IFR current in accordance with 14 CFR section 61.57 is automatically IFR proficient as well.

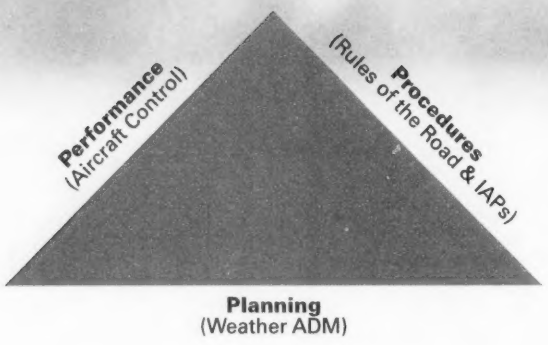
What *is* proficiency? According to one definition, proficiency is "the quality of having great facility and competence." When it comes to instrument-flying proficiency, for some pilots, e.g., those who have a wealth of IFR experience that includes many hours of flying in IMC, meeting the currency standard outlined in the regulation may be enough to ensure that they maintain "great facility and competence" in the full range of instrument-flying knowledge and skill. For others, however, and I include myself in this group, maintaining facility and competence, a.k.a. instrument proficiency, requires some extra effort.

The Proficiency Triangle

For those of us in the "needs extra work" group, I offer the three-sided "proficiency triangle" as a practical way to think about the elements involved in maintaining IFR proficiency.

If you pause for a moment to remember your initial IFR training, it was likely conducted in three basic segments. The first was learning to physically control the airplane solely by reference to instruments. Textbooks call it "basic attitude flying." For this discussion, we'll call it aircraft-control *performance*.

When you think about instrument training, currency, and practice, it's likely that your first thoughts and strongest memories involve the second element of instrument proficiency, which is the



world of instrument-flying *procedures*. These include regulations and operating principles for IFR, as well as instrument-approach procedures, standard instrument-arrival procedures, and instrument-departure procedures (standard instrument-departure procedures and obstacle-departure procedures).

Because instrument training and practice sessions normally focus on pilot performance, i.e., basic attitude flying and adherence to procedures, the third element, *planning*, does not always get the attention and respect that it deserves.

Planning —The Trip Starts Here

Weather is the reason for instrument flying. Though solid performance and procedural knowledge are essential to instrument proficiency, planning—especially as it relates to obtaining, evaluating, and applying weather information to the specific pilot/aircraft combination and intended mission—is the foundation and, indeed, the starting point of instrument flying "facility and competence."

In the July/August 2010 issue of *FAA Safety Briefing*, we focused intensely on these issues. To recap briefly, a proficient IFR pilot should understand that there are really just three ways that weather affects an aviator. Weather can:

- Create wind
- Reduce ceiling and visibility
- Affect aircraft performance

Reduced ceiling and visibility are the issues most relevant to a discussion of instrument-flying proficiency. Proficiency requires good planning. For any trip under IFR, especially if it takes place in IMC, good planning, in turn, requires a careful evaluation of issues such as:

Personal minimums. Your IFR ticket gives you the legal right to "take a look" or shoot approaches to minimums, but don't fly to the edge without being truly up to snuff in the performance and procedures sides of the IFR proficiency triangle. If you don't have personal minimums, your IFR proficiency plan should include taking the time to develop a basic list of what you will and will not attempt. Think of personal minimums as the human factors equivalent of a fuel reserve: The idea is to establish a safety buffer, or "reserve," between the pilot skill and aircraft capability required for a given operation, and the pilot skill and aircraft capability available through factors such as training, experience, currency, and equipment.

Options. The planning part of the IFR proficiency triangle also means taking the pilot's "always-have-an-out" mantra very seriously. Internet planning tools with graphical weather have dramatically simplified tasks such as identifying the direction of VFR weather and selecting alternates that are not only legal and in range, but also viable in terms of the flying mission you are trying to accomplish.

Performance — Practicing Aircraft Control

This side of the IFR proficiency triangle addresses your ability to keep the blue side up, even when the all-white view outside makes you wonder if you're flying through a milk bottle. Being truly proficient in performing the basic task of airplane control by reference to instruments is a critical, but extremely perishable, set of skills:

Instrument scan (cross-check). The basic IFR scan involves constant cross-checking of the instruments. Is your scan sharp? Could you honestly say that it is sufficiently ingrained through training, habit, and practice to be "automatic?" If you move between "steam gauge" round dials and glass-cockpit instruments, are you comfortable in both systems? Do you practice partial panel on a regular basis?

Instrument interpretation. How proficient are you in interpreting the results of your instrument cross-check scan? Even in an aircraft with glass-cockpit instrumentation, partial panel can offer challenges for interpretation. Having experienced a vacuum-system failure, I can personally attest to the confusion it can generate for instrument interpretation purposes. IFR proficiency requires keeping your interpretation skills sharp and practicing abnormal and emergency situations on a regular basis. Today's simulation technology offers a wide range of opportunities to practice these skills.

Photo by Susan Parson

Aircraft control. This skill involves using the information you obtained through cross-check and interpreted to make the airplane do what you want it to do. A pilot who is proficient in performing the aircraft-control task is one who has mastered two important skills. Attitude plus power equals performance, so a proficient IFR pilot knows the numbers—the pitch, bank, and power settings—necessary for the various phases of IFR flight. The second skill is using constant small corrections to maintain desired altitudes, headings, and airspeeds.

Procedures: Putting It All Together

The third side of the IFR proficiency triangle is the part you probably practice most: procedures. Proficiency with procedures involves both knowledge and skill. First, you need to have a rock-solid understanding of not just instrument-approach procedures (IAP), but also the range of IFR "rules of the road." One of the most important and, unfortunately, most overlooked rules of the road involves use of obstacle-departure procedures, or ODP. If you are operating in IMC from a non-towered airport located in mountainous terrain, understanding this subject is critical not only to proficiency, but more fundamentally, to staying alive.

The skill part is, of course, related to aircraft control. Can you consistently fly the required procedures—departure procedures, course intercepts, holds, standard instrument-arrival procedures, instrument-approach procedures, and missed approaches—to the standard you met when you passed your instrument check ride?

The proficient IFR pilot is always working for precision; that skill is even more important in the era of RNAV GPS navigation. The greater precision offered by modern navigation allows for narrower approach courses. That allows designers to create instrument-approach procedures for locations that would not previously have qualified, but it means that you have to fly the procedures more precisely, too.

Whether VFR or IFR, practice makes a proficient pilot and a proficient pilot is a safer pilot.

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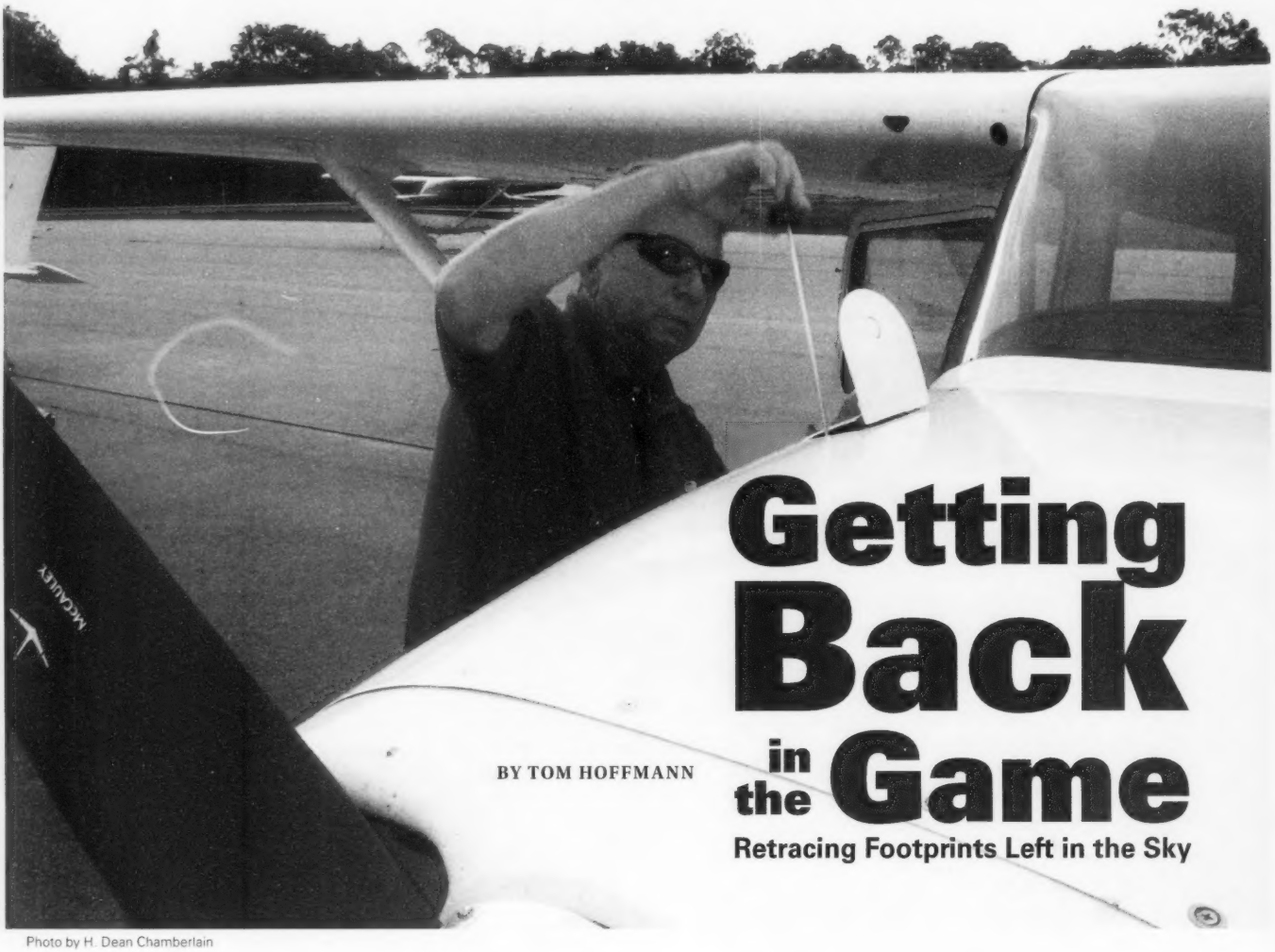
For More Information

Instrument Flying Handbook (FAA-H-8083-15A)
www.faa.gov/library/manuals/aviation/instrument_flying_handbook/

Instrument Proficiency Check Guidance
www.faa.gov/pilots/training/media/IPC_Guidance.pdf

Instrument Procedures Handbook (FAA-H-8261-1A)
www.faa.gov/library/manuals/aviation/instrument_procedures_handbook/

Best Practices for Mentoring in Aviation Education
www.faa.gov/training_testing/training/media/mentoring_best_practices.pdf



Getting Back in the Game

Retracing Footprints Left in the Sky

BY TOM HOFFMANN

Photo by H. Dean Chamberlain

Maybe you're married, have kids, and consider 20 minutes of free time a vacation. Perhaps a recent operation or medical condition has you worried whether you're fit to fly. Or, maybe the dust on your logbook triggers anxious thoughts of policies and procedures that have changed and now must be relearned.

These are all understandable reasons for a pilot to hang up the headset for a while, but they don't have to mean a permanent grounding. If the flying flame still flickers within, the opportunity to soar once again is yours for the taking. You may be surprised how easy it can be to get started again. With a solid plan and determination, along with the benefits of some exciting developments, you can easily shake off that rust and get back to enjoying the freedom only flying can offer.

Your first question is likely: With so many changes to consider, how do I even get started? There's no doubt getting back into flying after a long break can be daunting. I know. Last September marked my first flight since...let's just say my sectionals still depicted a magenta-checkered ARSA pattern around my home airport, Long Island

MacArthur Airport (ISP). Looking through my old flight bag made me feel like Rip Van Winkle waking up from a nap (thankfully, without the white hair). I had my work cut out for me, but I knew it would not be long before I could return to the skies.

A Personal Preflight Check

Whether it's been decades or just a couple of years, the best way to get back in the game is to start with a plan. Begin by exploring why you stopped flying. I highlighted a few reasons earlier, but among the most common relate to time, money, and medical issues.

Ask yourself what it is that's drawing you back. Are you returning to complete an unfinished rating? Maybe there are career or volunteer opportunities calling your name. Or, perhaps you simply would like to enjoy the freedom of flight once again. Depending on how long it's been since you've flown, you may be unaware of some changes that could make the prospect of returning to flight less overwhelming than you think. Let's take a look at some scenarios to see how they might apply to your situation.

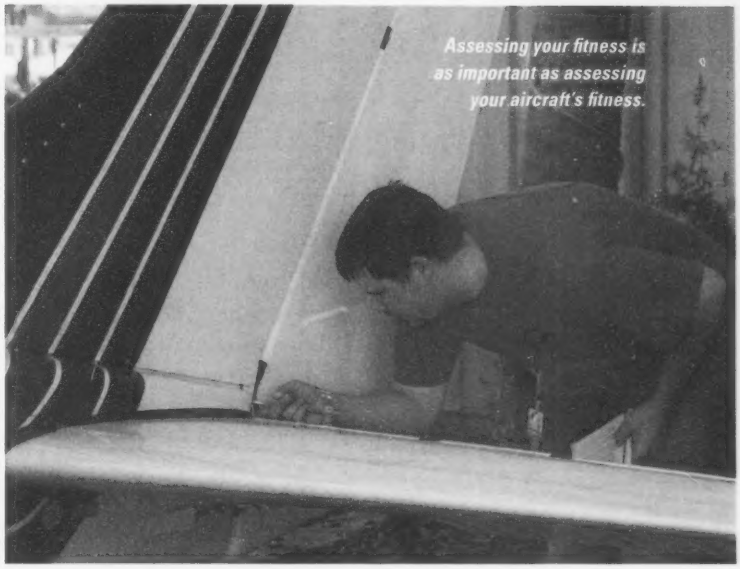
Medical Policy Makeovers

The first step for many returning pilots is an assessment of personal health and fitness. According to Dr. Warren Silberman, manager of FAA's Aerospace Medical Certification Division, there have been many favorable changes in the last 15 years to help pilots retain a current medical certificate. "What may have been disqualifying 'show-stoppers' years earlier may now be acceptable with revised waiver and special-issuance guidelines," says Silberman.

Among the conditions that are no longer automatic disqualifiers are high blood pressure, cardiac conditions, as well as insulin-dependent diabetes. The FAA Office of Aerospace Medicine now permits special-issuance medical certificates for airmen who are being treated with certain anti-depressant medication. The impact of this change is substantial, as it could affect hundreds of thousands of pilots currently diagnosed with mild to moderate depression.

When meeting with your Aviation Medical Examiner (AME), be upfront and honest about any medications you are taking or any changes to your health. It's also a good idea to work with a physician before your medical to try to resolve any issues, as well as gather the necessary

Photo by Tom Hoffmann



Assessing your fitness is as important as assessing your aircraft's fitness.

documentation your AME will need to process your case. According to Dr. Silberman, only 0.1 percent of airmen have their applications denied. Of those, a majority of the denials are due to a lack of proper documentation. He says most applicants eventually go on to get a medical.

To get more information on disqualifying medical conditions, contact your local AME or go to the medical certification section of www.faa.gov.

Lighten Your Load

A big change that opened doors for more pilots to regain the freedom and fun of personal flying was the Sport Pilot/Light-Sport Aircraft (SP/LSA) rule, implemented in 2004. Under this rule, pilots may operate aircraft that fall within certain reduced weight and speed parameters, and are required only to have a valid U.S. driver's license to validate medical fitness. One caveat, however: If you previously held a medical certificate, your most recent certificate must not have been denied, revoked, or suspended.

One aspect of SP/LSA is that it offers those watching their pennies a more affordable option to return to flight. Many LSA aircraft, like the new Cessna *Skycatcher*, can be rented wet for under a $100 an hour. You'll save on gas, too, as they typically burn 3-5 gallons per hour, much less gas

Photo courtesy of Mooney Airplane Company

than a standard single-engine trainer. If you already have a private-pilot certificate, you can legally fly an LSA provided you are current and it is in the same category you're checked out in. An important safety precaution: LSAs can have different handling characteristics so it's a good idea to get checked out with an instructor first.

Relearn Your ABCs

An important task for anyone returning to flying is getting up to speed on regulatory changes. "Whether you've been out for 20 years, or just two, you'll want to brush up on your airspace knowledge," says Tom Adams, chief flight instructor at Dulles Aviation, Inc., an FBO and flight school at Virginia's Manassas Regional Airport (KHEF). "Squawking 1200 in the wrong area may invite some unwanted guests." To avoid any visits from your local F-16 fighter squadron, be sure to study up on airspace changes, especially in areas like Washington, D.C. that have adopted a permanent Special Flight Rules Area (SFRA) and Flight Restricted Zone (FRZ). An online training course on www.FAASafety.gov is now required to fly under VFR in the DC SFRA.

The best way to get back in the game is to start with a plan.

There's also the matter of Temporary Flight Restrictions (TFR), which, since September 11, 2001, are used routinely to restrict airspace for 30 miles for presidential visits or world-leader meetings, such as the G8 Summit. TFRs can pop up unexpectedly so before any flight, be sure to research NOTAMs and check the FAA TFR list (http://tfr.faa.gov/tfr2/list.html) for updates.

Now, for those who recall Ronald Reagan or George H. W. Bush as being in office during your last flight, you'll need to take time to review the changes that resulted from the FAA's reclassification of the U.S. airspace system in 1993. The changes removed terms like TCAs and control zones, and replaced them with the ICAO-compliant titles that range from Class A to Class G airspace. For more information, see chapter 3 of the *Aeronautical Information Manual* (AIM) or chapter 14 of the *Pilot's Handbook of Aeronautical Knowledge*.

As far as regulations go, Title 14 Code of Federal Regulations (14 CFR) part 61 went through some significant changes as well over the years, including:

- Changes to duration of medical certificates for pilots under 40 (61.23)
- Tailwheel aircraft endorsement requirement (61.31)
- Logging of PIC time (61.51)
- Changes to instrument currency and rating requirements (61.57, 61.65)

Some proposed changes to 14 CFR part 61 to be on the lookout for include replacing the 10 hours of complex time required for a commercial certificate with 10 hours of advanced instrument training as well as allowing student pilots to train and apply for a private pilot certificate and instrument rating concurrently.

Fill the Right Seat with the Right Person

Successful reentry to flying requires the guidance of a good instructor; don't overlook this important step. Find an instructor who understands your situation and is willing to take extra time to help you get back in your game. Be clear about your intentions and work together to set attainable training goals. Since you may have a lot of ground to cover, don't be afraid to ask questions or request a review of any segments of flying you feel out of touch with, like stalls or steep turns.

When it's time to start flying, don't be too hard on yourself if you seem a bit out of form. My first landing after my long absence was a greaser, but on the next try, I bounced around worse than a bull rider. A few bumps can be hard to swallow, but that's to be expected when such a highly coordinated skill is put on hold for a while. The key: Remain patient and keep at it.

A good exercise to help get you primed before you even flick the master and turn the key is to spend some extra time with your pre-flight check. Follow your aircraft's checklist carefully. Spend some time in the left seat reviewing instrument and comm/nav switch locations, especially since some pilots might be in for quite a surprise once they climb in the cockpit.

This is because steadily replacing the classic "six pack" of basic instruments are shiny new glass-panel displays that host a suite of new features, which is made possible by the advent of GPS technology. If this is completely unfamiliar to you, consider getting your "air" legs before tackling a Garmin 1000. Better yet, make unlocking the benefits of GPS a fun incentive for you to continue with your flying.

Flight Review and Done?

It's been said that a pilot certificate is a license to learn, and whether you're an active pilot or one on hiatus, this couldn't be more accurate. Much like a checkride for a new rating, a flight review shouldn't mark the end of your learning process.

"Don't be content with just passing your flight review," says Dan Williams, a Maryland-area private pilot who is familiar with returning to flying after a few dry spells. "Make an effort to expand and test your knowledge in all areas. And, if you're not asked to do it on your check, ask for it to be reviewed. This will help you feel more confident when you're on your own again."

Successful reentry to flying requires the guidance of a good instructor.

Staying proficient on the ground is important, too. This is where FAA's WINGS pilot proficiency program can help. Designed to help encourage a commitment to safety education, the program has attracted more than 48,000 airmen who can earn credits by completing online courses and attending safety seminars. Those who achieve the basic phase will get credit for the flight review requirements covered in 14 CFR part 61.

I'm in a Holding Pattern and Can't Get Out!

Was this article about you—with a burning desire to get back in the cockpit, but in a current holding pattern due to family and/or career commitments? That's okay. While the timing might not be ideal now, that could soon change. The key is to maintain the interest and enthusiasm in flying by keeping up with aviation news and training, whether through periodicals, like this one, and/or aviation Web sites, such as www.FAASafety.gov and www.aopa.org. You can also attend local air shows or fly-ins, perhaps to lend some time and expertise as a volunteer. Check with your state aviation authority for events in your area.

Staying involved and immersed in aviation in whatever capacity possible will be the next best thing to being airborne and it'll keep your engine primed for when you return. Don't worry, the sky is waiting!

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

Putting it all Together

Planning your next Cross-Country Flight

BY JAMES WILLIAMS

Fall is a good time to travel. The daily worry of summer thunderstorms has faded; winter weather is still in the future for much of the country. You may have children who are back in school and work has yet to pick up. With newfound freedom, where do you want to go?

Like any proficient pilot, you know you can't just hop in the airplane and take off. The amount of preparation varies depending on where you're going and how familiar you are with the trip. It's not unlike getting into your car for a run to the grocery store. You probably don't get on Google™ or MapQuest® for directions.

It can be similar in an airplane when you are traversing a familiar route. I used to make a Florida "milk run" flight between Melbourne and Lakeland, which are about 80 miles apart. Because it was not far, but even more because it was familiar, the planning was not much more elaborate than calling Flight Service for a briefing and filing a VFR flight plan.

While you don't need a lot of planning to do a few touch-and-go landings or to hop over to a nearby airport for the fabled "$100 hamburger," you do need to invest more time in planning for a real cross-country flight. If you have never made a long-distance flight, or if your flight-planning skills for such an endeavor are a bit rusty, this article is for you.

Break the Flight into Bites

Where do you start? There is no single correct answer, but some pilots start with a large-scale planning chart. Others might find a mapping program, such as Google maps, more helpful. I've always liked using the freely available DUATS programs (www.duat.com or www.duats.com) to plot a great circle line between my proposed departure and arrival points. If you're an AOPA member, you can use its flight planning tools online at: www.aopa.org/flight_planner/. The point is to start with the big- picture view, just as you do when getting weather information.

The "direct-to" line gives you a great starting point, but now comes the task of making adjustments. First, break the direct-to line into bits and bites that you and your airplane can

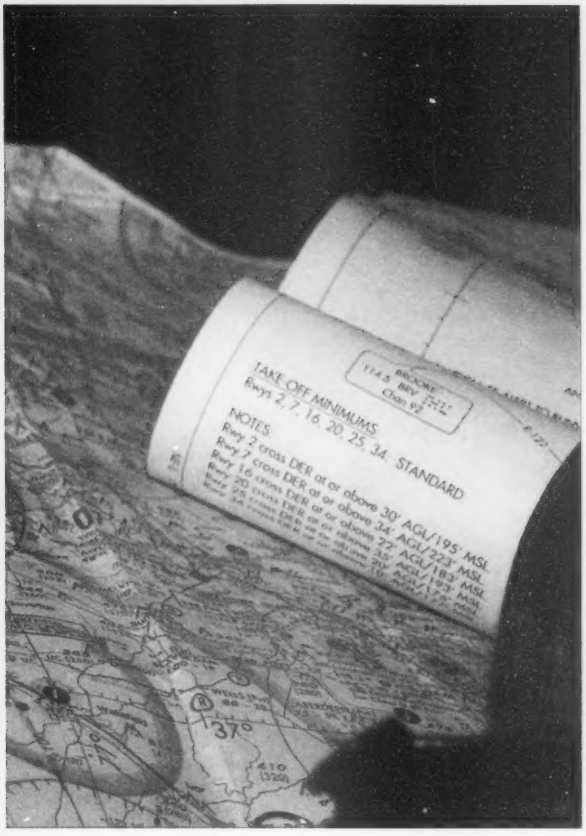


Photo by Tom Hoffmann

comfortably "chew." The size of each "flight bite" depends on your airplane's range and the physiological range of its occupants, but a good rule of thumb for many light GA airplanes is 200-300 miles. Use a plotter or an online measurement tool to measure and mark the segments.

The next step is to analyze each segment. The great-circle route a flight-planning program draws for you will rarely be practical across its entire length. Here are some of the factors to consider in your evaluation of each individual flight bite.

Plane and Pilot Performance

For those in the Southeast and Mid Atlantic where the ground is flatter and the mountains more benign than their western cousins, airplane performance isn't usually a factor. But, if you venture into unfamiliar terrain, you'll need to make it a factor from the start. For example:

Are there flight segments that include high terrain? If yes, does your airplane have the performance capability to fly over them, even with a high density altitude? Is the terrain high enough to require supplemental oxygen for the pilot and/or passengers? What are your options in case of weather or mechanical difficulties? Is there another way that might work better? Are there airspace constraints or temporary flight restrictions? The answers to these questions may suggest some modifications to each individual flight bite.

How about fuel? What is your airplane's range, using the most conservative estimate of its fuel consumption? Remember, legal reserves are just a starting point, so factor in a comfortable margin. Also, be sure to check your flight segments for fuel availability along the way and adjust the route accordingly.

How about pilot and passenger comfort? We all have physiological needs, but there is also a fatigue factor. Consider adjusting the segments to fly longer legs when you are most rested and shorter legs as the flying day progresses.

Food and Shelter

Another factor to consider in adjusting the length and direction of your individual route segments is availability of services.

Fuel is important for the airplane's health, but food is important for the well-being of its pilot and passengers. Adjust the "flight bites" as necessary to allow options other than grabbing a bite from the airport vending machine.

Adjust the day's final segment to ensure that shelter is available in the form of hotels or other lodging. Don't forget that you will need a way to get there: Is there a courtesy car or a car-rental facility? What about FBO business hours?

Maintenance availability might also be a consideration in adjusting the direction and length of your flight segments. If you are flying with supplemental oxygen, you'll also want to plan stops at facilities that can service the tanks appropriately.

The Internet provides a nearly infinite range of ways to get this kind of long-distance planning information. A good place to start is AOPA's airport directory at: http://www.aopa.org/airports/ (open to the public) or www.airnav.com. These sites are good places to evaluate your potential stops. They include information on surrounding businesses, hotels, car rentals, and other services. Also, they generally contain information from the FAA's *Airport/Facility Directory*, but, remember, they aren't a substitute for its information about aeronautical infrastructure.

Once you've reviewed all this information, you can rank the factors most important to you and adjust your route accordingly. For example, airport A may have a slightly shorter runway, but be open longer or have better services than airport B.

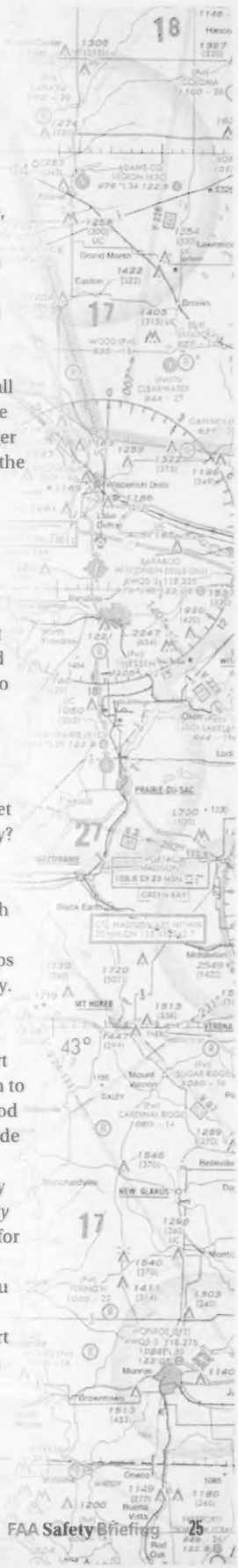


Photo courtesy of Cessna

The Best Laid Plans ...

Survival kits are generally not necessary for everyday flying, but as you venture farther away from home base consider bringing some kind of survival kit, along with knowledge on how to use its contents. The FAA offers survival videos online at www.faa.gov/library/online_libraries/aerospace_medicine/aircrew/aircrewsurvivalvideos/. In addition, FAA offers a free one-day basic post-crash survival class through its Civil Aerospace Medical Institute (CAMI) in Oklahoma City (http://www.faa.gov/pilots/training/airman_education/survival_training/). The bottom line is that you'd rather have it and not need it, than need it and not have it.

Phone a Friend

One of the best—but often overlooked—resources for long-distance flight information and advice is the pilot community. Aviation is a small world. Tell your fellow pilots what you're up to (so to speak), and chances are good that someone will have just the kind of advice and experience you need. Fellow pilots can provide useful information and bring up points you might not have considered. For example, when I flew out west with my father a few years ago, other pilots gave us some important and useful advice on leaning the engine at higher altitudes to get the best performance. A fellow pilot also served as our consultant for safely crossing some of the mountains. He was able to provide insight and guidance that made a big difference in our trip.

Remember, you can also serve as a resource. When I learned that a friend was planning a trip to an airport unfamiliar to him, I realized I knew a pilot who had flown that exact trip many times. Through the magic of connections, my friend was able get some key information that made his trip a little easier.

If you can't think of anyone in your aviation circle that might be of assistance, remember the FAA Safety Team, or FAASTeam. In addition to online courses, resources, and WINGS offerings, your local FAASTeam manager and FAASTeam representatives can provide advice. Check the FAASTeam Directory at www.FAASafety.gov to find the folks in your home area as well as in the places you're going. It's not just a corny joke: The FAASTeam folks are from the government and they are here to help you.

Stretch Your Wings!

Flying is fun, and using your flying skills to go places is even more fun. Using these tips, you can safely stretch your wings, broaden your skills, and increase your proficiency as a pilot.

James Williams is FAA Safety Briefing *assistant editor and photo editor. He is also a pilot and ground instructor.*

TOM HOFFMANN

Nuts, Bolts, and Electrons

Keeping the Batteries Charged

How to Maintain Proficiency as an AMT

What does it mean to be proficient? The dictionary defines it as being highly competent, skilled, or adept. For example, you might be proficient at basketball, playing the flute, or food shopping on a tight budget. Yet, as everyone in aviation knows, being proficient is more than just being "good" at something. It is an inherent expectation as well as a lifelong professional commitment—a commitment you clearly expect from an Aviation Maintenance Technician (AMT).

Long before glass cockpits or composite materials, Jerry Lederer, Flight Safety Foundation founder (and the man who inspected Lindbergh's Spirit of St. Louis before its transatlantic flight), wrote the Mechanic's Creed. Who knew that Lederer's words would transcend decades and still be displayed in hangar break rooms and shop floors around the world? As the creed deftly states, "I pledge myself to never undertake work or approve work which I feel to be beyond the limits of my knowledge." That leads directly to the challenge for 21st century AMTs: How to keep your knowledge batteries charged and operating at peak performance.

Today's AMT

In an industry that changes almost daily, staying proficient is not easy. Today, many AMTs lack formal training with complex electronic and digital equipment as well as with new composite materials used in airframe components. With no true "recurrent training" requirements, it often falls on individual mechanics to keep themselves up to date on the latest advances in aviation maintenance and to fulfill recent-experience requirements.

Those requirements, listed in 14 Code of Federal Regulations (14 CFR) section 65.83, stipulate what a mechanic must do to keep his or her certificate valid. In a nutshell, within a preceding 24-month period, a mechanic must (for at least six months) supervise other mechanics or perform maintenance in accordance with the certificate and rating.

In 1991, FAA created an AMT awards program to promote continuing training and education. The idea of the William (Bill) O'Brien Aviation Maintenance Technician Awards Program is to provide incentives for AMT employees and employers to make training more integral to a mechanic's job. Through the awards, the FAA recognizes eligible technicians and employers by issuing awards to those who receive or promote initial and recurrent training. Training earned toward an AMT award falls into one of two categories: mandatory and eligible training.

The mandatory core training, found on www.FAASafety.gov, must be completed by all AMTs to receive a certificate-of-training award. This training focuses on aviation-maintenance-accident causal factors, special-emphasis items, and FAA regulatory issues. Eligible training includes additional hourly training that applies toward the program. It must be aviation-maintenance-career-related training in such categories as technology, human factors, and certain courses from an accredited trade school or university.

Keep an open manual and an open mind, especially when it comes to new and innovative ways of learning and practicing your profession.

"The quest for expanding knowledge goes hand-in-hand with professionalism," says Assistant FAA Safety Team Manager Phil Randall. "We are big advocates of the AMT awards program since it promotes a culture that keeps AMTs mentally sharp with industry knowledge and stresses on-the-job safety fundamentals."

Look Outside the Tool Box

With a little ambition and creative thinking, you can find many ways to stay proficient. FAA Aviation Safety Airworthiness Inspector Kim Barnette says sometimes you have to look outside the box. "Check out programs at community colleges and trade centers. Attending a local night class might be more affordable than traveling and having to shut down the shop for a day."

Attending local air shows and fly-ins can have maintenance benefits. Many offer hands-on workshops that help improve skills in welding, sheet-

Photo by Tom Hoffmann

metal work, fabric covering, and kit-aircraft building. Some workshops are FAA-approved for credit towards IA renewal requirements and the AMT awards program.

Consider a change of scenery. Mechanics can reap benefits from working with different airframe and engine components. One way is to use exchange programs where maintenance shops swap tools and personnel to allow mechanics to work on different specialties. This provides the added benefit of challenging AMTs to work outside their normal comfort zones. Hands-on training at another facility might cost some time and goodwill, but the safety dividends are invaluable.

Yet another way to build proficiency is through volunteering. "Organizations like the Civil Air Patrol and Coast Guard Auxiliary units can always use extra help," adds Barnette. "Also, consider visits to a local high school with an aviation program. The students will benefit, and so will you."

Cleanliness is Key

Organization is another major element in keeping proficient. While there are no recent-experience recordkeeping requirements for AMTs, it is important to be organized and stay on top of all your training requirements. Ensure that maintenance logs and/or work orders are filled out properly and clearly. This helps maintain the discipline needed for both safety and professionalism.

Keep an accurate log to document all completed training and recent-experience requirements. Consider maintaining a separate log to track errors and lessons learned. Reviewing this log periodically will help you evaluate trends for tasks you regularly perform. And, keep all your training certificates. This will help with obtaining credit in the AMT awards program and could be helpful in career advancement.

Looking to the Future

The future of the AMT profession promises many changes. As aviation safety consultant and former NTSB board member John Goglia wrote recently in *AMT Magazine*: "Tomorrow's mechanics are as likely to show up at the aircraft with a laptop as with a toolbox."

To help address this gap between technology and AMT skill sets, the FAA formed an Aviation Rulemaking Advisory Committee to recommend changes to AMT initial-training requirements. "The group's objective," says FAA Aircraft Maintenance Division Manager Carol Giles, "is to make the curriculum for mechanics-in-training more fluid and more in line with addressing modern topics and procedures."

The learning process never ends. In addition to keeping an open manual, it's important to keep an open mind, especially to new and innovative ways of learning and practicing your trade. As the Mechanic's Creed says, "...the safety and lives of others are dependent upon (your) skill and judgment."

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

For More Information

FAA Advisory Circular 65-25E AMT Awards Program
http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.list/parentTopicID/121

FAA Safety Team Maintenance Hangar
http://www.faasafety.gov/content/TabLanding.aspx?tab=mechanics

The Need for Speed...

But Which One?

BY JASON BRYS

Photo courtesy of Garmin

Most people who become pilots already have experience driving a car; the only thing an automobile driver needs to do to be a "speed reader" is to glance at the speedometer. Since it is a natural tendency to look for the familiar, fledgling pilots generally assume that the airspeed indicator is simply the airplane equivalent of an auto speedometer. Yet, when it comes to airplanes, measuring speed is a deceptively simple concept—but one that is important for a proficient pilot to master. As we will see in this article, it is important for both performance and safety reasons to understand how values, such as groundspeed, true airspeed, indicated airspeed, and calibrated airspeed, are calculated and used.

Groundspeed

Let's start with the obvious one. Since most people perceive flying as a speedy means of moving from point A to point B, one of the first questions a pilot is likely to hear from a non-pilot or passenger is a variation of "how fast does it fly" or "how long does it take" between any two points. Pilots quickly learn that the value needed to answer this question is not necessarily the number shown on the airspeed indicator. Unlike the speed of a ground-bound car, the groundspeed of an airplane is substantially affected by factors such as wind, and it varies accordingly. A pilot cannot answer "how fast" or "how long" questions with any precision without knowing the groundspeed for a particular day, time, and route. Although modern avionics, e.g., in glass cockpits, do provide groundspeed readings, those avionics (like pilots using the more traditional analog gauges) use wind information to calculate groundspeed from a value called "true airspeed."

True Airspeed

True airspeed, or TAS, is a measure of the physical speed of the aircraft in relation to the air around it. Just as differences in wind velocity affect groundspeed, differences in air density affect true airspeed. At the same engine power setting, e.g., 75 percent power, an airplane can move faster through air that is less dense. That's why higher altitudes can translate to higher true airspeeds.

Like aircraft groundspeed, TAS cannot be measured directly. Rather, the pilot uses outside air temperature (OAT), pressure altitude, and calibrated airspeed CAS (see below) to calculate this value.

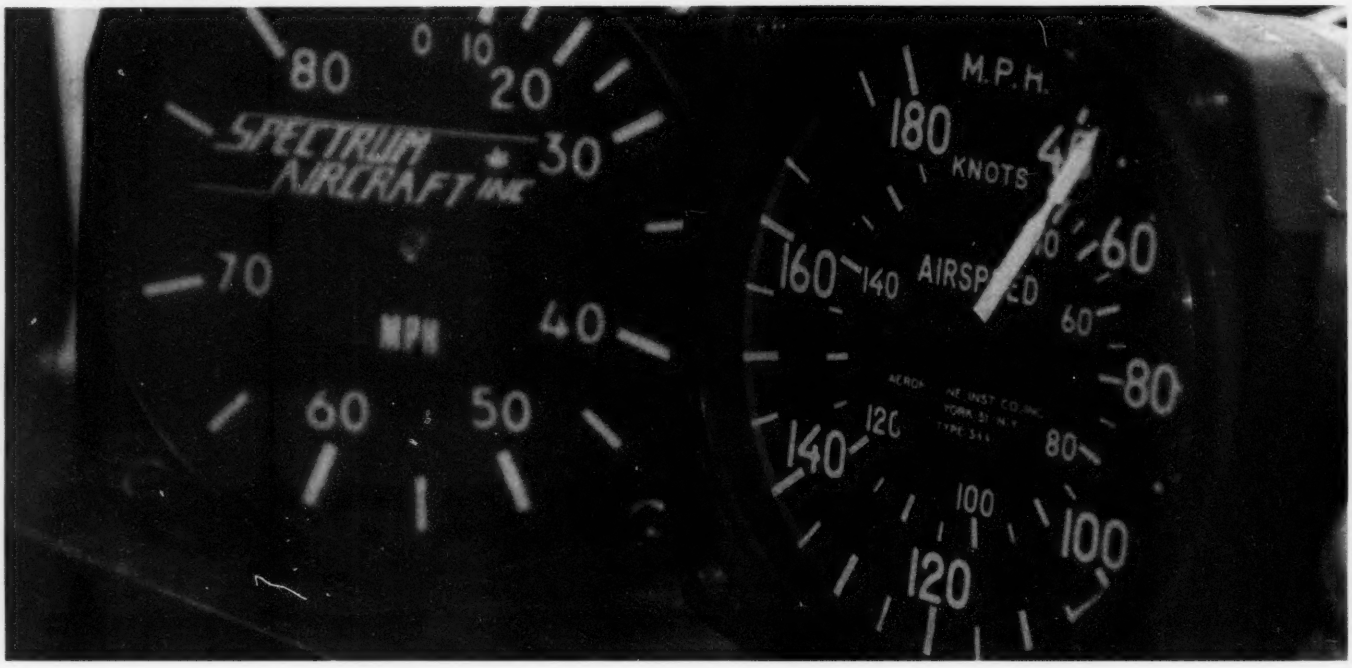
Indicated Airspeed

The airspeed indicator in the cockpit displays—you guessed it—indicated airspeed (IAS). IAS matters a lot for actually flying the airplane. All the operating speeds for the airplane, such as stall speed, maneuvering speed, performance speeds, and other limiting speeds, are generally provided as indicated airspeeds. It thus indicates to the pilot the bounds of the airspeed limitations to operate the aircraft in.

Measuring speed is a deceptively simple concept—but one that is important for a proficient pilot to master.

To provide this important aerodynamic speed information to the pilot, the airspeed indicator takes information from the pitot-static system. The pitot-static system includes the pitot tube and a static air source. Both are connected to the airspeed indicator. The airspeed indicator measures the pressure difference between the ram, or impact, air from the pitot tube and the still, or static, air from the static

Photo by Tom Hoffmann



source. The airspeed indicator then displays this pressure difference to the pilot as IAS.

Calibrated Airspeed

We have already established that speed in an airplane is substantially more involved than for a car. So you won't be surprised to learn that IAS is not the end of the story. Here's why. As with any mechanism, the pitot-static system on an airplane is not perfect, and it may have errors. As a rule of thumb, the location of the airplane's static source is to blame for most of the system's errors, commonly referred to as position error.

Airplane manufacturers go to great lengths to minimize pitot-static system error. Even in the computer age, where Computational Fluid Dynamics (CFD) programs perform thousands of complex calculations to determine the best location for the pitot tube and static port, chances are good that the airplane manufacturer will still have to make some modifications during aircraft development. For example, the manufacturer might vary the depth of the static port, change the shape or location, or even add an additional static port on the opposite side of the aircraft in order to meet aircraft certification requirements. Still, the system is rarely perfect without the use of software. Because position error has an impact on the accuracy of indicated airspeed, manufacturers therefore define a "calibrated airspeed" (CAS) to correct IAS for position error.

The reason for understanding the difference between IAS and CAS is to avoid inadvertent operations that exceed the airplane's published limitations.

In most airplanes, you can determine the accuracy of the airspeed system and the magnitude of the remaining position error simply from reviewing the airplane flight manual (AFM) or owner's manual (some aircraft were not required to have AFMs). In the AFM or owner's manual, you will find a chart that converts the indicated airspeed to calibrated airspeed.

Why It Matters

It's not hard to understand why it matters to understand the difference among values like groundspeed, TAS, and IAS. However, you may now be wondering why you need to pay attention to the relationship between calibrated and indicated airspeed. The answer may not be that obvious. It can, however, make a difference. You might notice that on many airplanes for speeds below the defined approach speed (which should be close to 1.3 times the stall speed for the approach configuration), the difference between the IAS and CAS may increase. For example, some airplanes will stall at an indicated airspeed of zero—not because the machine is defying the laws of gravity and aerodynamics, but rather

because of the difference between IAS and CAS.

Take another example: While the airspeed indicator on a particular airplane might show a stall at an IAS of 50 knots, the airplane is in fact stalling at a CAS of 58 knots. Because of this it might appear to the pilot that the airplane is flying at a speed substantially lower than the published calibrated stall speed, whereas the airplane is really at the same speed.

Be aware, however, of the quirks in your particular airplane. In aircraft certified before December 1978, the airspeed markings on the airspeed indicator were required to be marked in CAS. In these aircraft, the colored arcs and lines on the airspeed indicator may not correspond exactly to the airplane's IAS. On airplanes with indicators marked in CAS, flying just at the edge of these markings may not be the best way to fly the airplane.

For instance, the start of the caution range in one common general aviation aircraft is 210 miles per hour (mph) calibrated airspeed. The caution range is marked by a yellow arc starting at 210 mph. If the pilot is flying 210 mph IAS in this particular airplane, though, the CAS is actually 214 mph, which means the pilot may be unknowingly exceeding the airplane's limitations. The reason for understanding the difference between IAS and CAS is to avoid inadvertent operation at higher or lower speeds than desired, or operations that exceed the airplane's published limitations.

Know Before You Go

As always, the basic message is that being a proficient pilot means knowing the airplane you are flying. Prior to getting into an airplane you should review the published speeds. When you review your AFM or owner's manual look at the speeds given and be sure you understand whether these are indicated or calibrated airspeeds. Don't make any assumptions, because even on older airplanes, takeoff and landing performance data is typically given in terms of IAS rather than CAS. Determine if the markings on the indicator are in CAS or IAS by looking on the type certificate data sheet (found at http://rgl.faa.gov) or in the AFM or owner's manual. If the speeds are listed in CAS, consider making a "cheat sheet" to convert those speeds to IAS for ready reference. By flying the right speed, you can ensure that you are flying within the approved safe envelope of the airplane.

Jason Brys is a Flight Test Engineer at the FAA Wichita Aircraft Certification Office. He is a private pilot with instrument privileges and holds an A&P certificate.

Keep Informed with

FAA's Aviation Maintenance Alerts

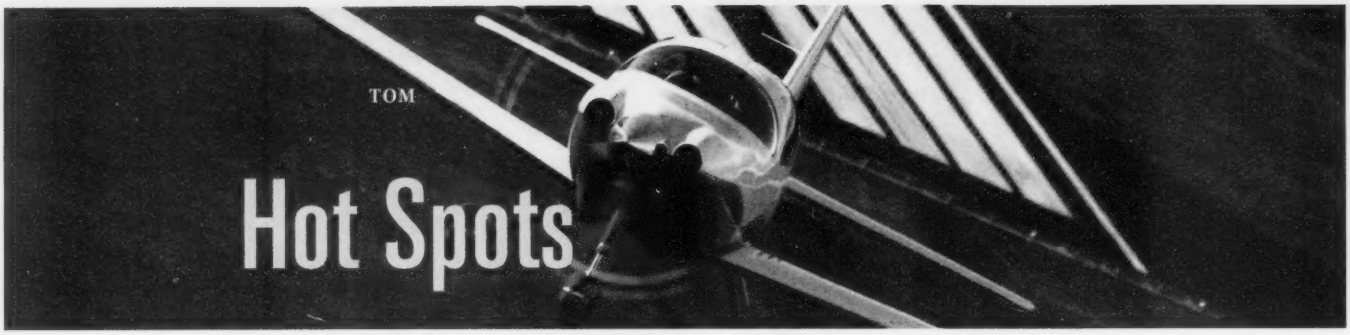
Aviation Maintenance Alerts (Advisory Circular 43.16A) provide a communication channel to share information on aviation service experiences. Prepared monthly, they are based on information FAA receives from people who operate and maintain civil aeronautical products.

The *Alerts*, which provide notice of conditions reported via a Malfunction or Defect Report or a Service Difficulty Report, help improve aeronautical product durability, reliability, and safety.

Recent *Alerts* cover:

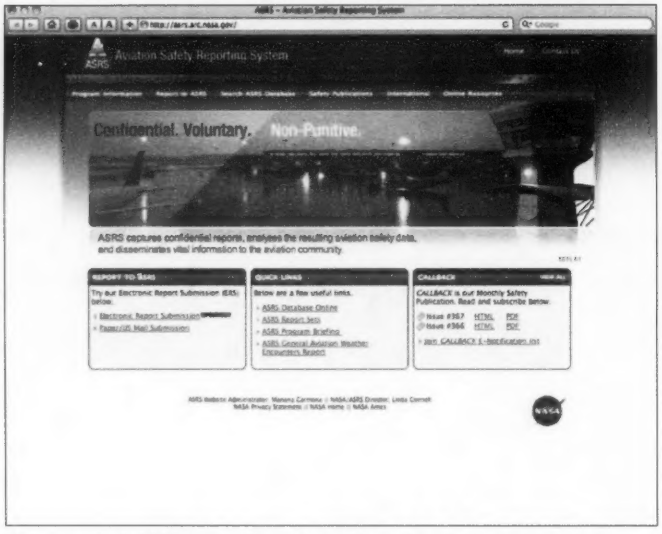
- Cracked isolator mounts on the Air Tractor AT301
- Cracked main gear on the Cessna 402C, 414A, and 421C
- Cracked cylinder head on Continental IO-550-N25 engine

Check out *Aviation Maintenance Alerts* at:
http://www.faa.gov/aircraft/safety/alerts/aviation_maintenance/



NASA's Aviation Safety Reporting System:

Gathering data to improve safety


Aviation Safety Reporting System
Confidential. Voluntary. Non-Punitive.
ASRS captures confidential reports, analyses the resulting aviation safety data, and disseminates vital information to the aviation community.

You can submit ASRS reports by mail or online at http://asrs.arc.nasa.gov/.

When most people think of NASA, images of exploding supernovas and spiraling galaxies come to mind. But for airmen who use the National Airspace System (NAS), NASA's significance takes on a much different meaning. For the past 35 years, NASA has been the backbone of the Aviation Safety Reporting System (ASRS), a program that relies on candid feedback from airmen to promote the quality and safety of the nation's aviation system. Yet, despite its positive influence on aviation safety, there are still many questions and misconceptions about the program that keep it from being used more frequently. A closer look can reveal just how easy-to-use and effective this system is in promoting safer skies for you and your fellow airmen.

The success of the ASRS program is directly attributed to the users of the NAS whose reports on unsafe conditions and self disclosures help identify discrepancies and deficiencies in all facets of aviation operations. The program accepts comments from pilots, mechanics, dispatchers, ground personnel, flight attendants, and most recently, air traffic controllers. Comments received—on everything from airport lighting issues to engine problems—all feed into the heart of the system, which is the ASRS database. With nearly a million reports received since the program's start, the ASRS database is considered the largest source of voluntary aviation safety information in the world.

"Safety hazards and incidents may occur regularly in the NAS," says Jay Pardee, FAA Chief Scientist and Technical Advisor for Vulnerability Discovery and Safety Measurement. "Without the firsthand flight-crew perspective offered in ASRS reports, many of these system-safety problems would go unnoticed and unresolved."

Consider the following ASRS report, which describes a Cessna 172 pilot who becomes disoriented while taxiing at night, resulting in a runway incursion on each of the airport's three runways:

> *I expected my taxi clearance would take me down the west side of Runway 2, but realized later that this route did not exist. Ground gave me an unexpected clearance of D3 to D to D1. I decided to taxi down it until I saw Delta. Once on D3, however, the confusion of lights and the odd angles of runway and taxiway intersections confused me and I found myself taxiing down Runway 2 with no immediate way off. I notified Ground that I was 'lost' and needed some help. Experiencing a sort of 2-dimensional spatial disorientation among the lights, I made another false start onto Runway 6...and in the darkness, overshot the somewhat faded hold line for Runway 31 by about 10 feet.*

Keeping it Confidential

Despite its many benefits, it's understandable how an airman might be hesitant to submit an ASRS report on an unsafe condition, especially if it involves a possible violation of federal regulations. For this reason, FAA designed the program to safeguard the anonymity and confidentiality of the reporter. This explains NASA's involvement: The

agency acts as a non-regulatory third party to receive and analyze the reports, and to ensure they are de-identified before being passed on.

To further encourage a free flow of information, the program also offers immunity from disciplinary action under certain circumstances. The conditions required to have immunity from a penalty or certificate suspension include:

- An ASRS report form submitted within 10 days of the event
- A violation that is inadvertent and not deliberate
- A violation that does not involve a criminal offense or accident
- An airmen who is qualified or competent to hold his/her certificate
- The person who submits the report has not been involved in an FAA enforcement action and found in violation of federal aviation regulations within the previous five years

How Does It Work?

To submit an ASRS report, use ARC Form 277B, (or simply the "NASA form"). Visit your local Flight Service Station or Flight Standards District Office (FSDO) for hard copies, or you can request one by mail from NASA. Airmen can also submit a report online at http://asrs.arc.nasa.gov/report/electronic.html. Pilots should select the General form.

Each form has a tear-off portion that contains the submitter's name and contact information, as well as a section for details about the event or situation. When NASA receives the report, the tear-off section is removed, time-stamped, and returned to the submitter as a receipt. Going a step further to protect anonymity, NASA also deletes all details elsewhere in the form that could potentially identify the submitter. The only exception to this de-identification of personal data is with criminal offenses and accidents which are reported, in full, to the Department of Justice and NTSB.

FAA is also bound to uphold this non-punitive agreement by Title 14 Code of Federal Regulations (14 CFR) section 91.25, which prohibits using ASRS reports in any enforcement action, except with regard to accidents and criminal offenses. The FAA's level of commitment and continued support of this program speaks volumes about how much it values the safety information gained by these reports. There has never been a breach of confidentiality in the ASRS program's history.

A Win-Win for Aviation Safety

During the last 20 years, ASRS reporting has steadily increased and now averages more than 4,000 reports a month. General aviation reports contribute to nearly 30 percent of total ASRS reports. For FAA Aviation Safety Analytical Services Manager Vivek Sood, these thousands of reports represent more than just numbers. "They translate to real opportunities to improve safety and monitor trends that can benefit everyone in the system."

Help improve safety—use ASRS to report safety incidents.

One way reports are leveraged to promote safety is through an alert messaging system. The alerts relay safety information about a potentially unsafe situation, e.g., a confusing approach procedure, to the appropriate FAA office or aviation authority for evaluation and corrective action if needed. Another ASRS product is *CALLBACK*, a popular monthly newsletter that incorporates information from reports in an insightful and thought-provoking style. The issues are at: http://asrs.arc.nasa.gov/publications/callback.html.

The concept of ASRS-type reporting isn't limited to the United States. Brazil, China, Spain, and more, have adopted their own versions. Industries like medicine and railroad safety have also adapted the ASRS model to help them identify problem areas.

"The ASRS concept is simple, but its impact on aviation safety is far-reaching," says Pardee. "This trusted system has demonstrated for decades the ability to help prevent avoidable accidents by relying on its biggest asset and best source for information—the eyes and ears of frontline users."

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

For More Information

FAA Advisory Circular 00-46D
http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/list/AC%2000-46D/$FILE/AC00-46D.pdf

NASA ASRS Web site
http://asrs.arc.nasa.gov/

ASRS Electronic Report Form for Pilots
http://asrs.arc.nasa.gov/docs/general.pdf

FAAST

Federal Aviation Administration

SAFETY TEAM

Got Safety?

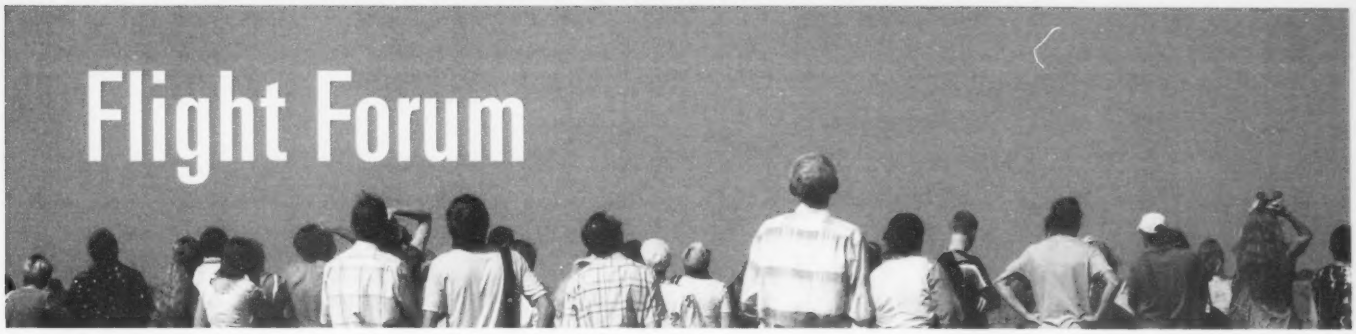
Are you planning a cross-country flight? Do you want to expand your knowledge on maintenance procedures? Are you looking for local safety/TFR information? At www.FAASafety.gov, the FAA Safety Team has a host of safety resources: online learning center, information about safety events and seminars, and much more. Log on today!

www.FAASafety.gov

FEDERAL AVIATION ADMINISTRATION

Cessna photo

Flight Forum



Correction

I am a meteorologist and former Flight Service Specialist. I read your article ("The Whither and Whether of Flying in Weather," July/August 2010 *FAA Safety Briefing*), and while it covered some basics of METARs and TAFs, there was one error. You mentioned that "temperatures in METARs, TAFs, and winds and temperatures-aloft reports." The error is that TAFs do not forecast temperatures. There are five elements to a TAF. They are: wind, visibility, weather, sky conditions, and wind shear, which is only forecast if it is expected to occur.

John Coppola,
FAA New York En Route Center

Thanks much for the clarification.

Anticipating Trouble

You asked for comment on your new column (Vertically Speaking, May/June 2010 issue)...I have spent more than 40 years trying to preach to people young and old that helicopters are not more difficult or dangerous to fly than fixed-wing aeroplanes, they are just different. Yet, in your very first column you raise the old myths and fears again for budding pilots...When lay people talk to me about "how hard it is to fly a helicopter" I remind them of how hard it was when they first learned to drive their auto... gears, clutch, even steering until one day, magic, it became second nature. It is the same with a helicopter, except that some time in your life you will back your auto out of the garage and scrape the fence post because you weren't paying attention...Yes, it is true that the many of the missions for which the helicopter is superbly fashioned require levels of skill and concentration from the crew but, as the statistics show, that doesn't make the aircraft dangerous. It is the person flying it who needs to be properly taught, both to fly and not to take risks.

Elfan ap Rees

Point taken. Elfan ap Rees is an aviation writer, historian, helicopter pilot, and collector of all things rotorcraft at The Helicopter Museum in Weston-super-Mare, Somerset, England. As we noted in the July/August 2010 Vertically Speaking column, the worldwide number of helicopter accidents is relatively constant at around 600 per year. The FAA and the International Helicopter Safety Team (IHST) are working on several fronts to improve that record. IHST, in particular, has been gathering precise and accurate data as an early step. It is data that is most effective at putting to rest old myths and fears—and helps everyone in aviation address the real issues. Further, this issue's column addresses your very point, "It is the person flying...who needs to be properly taught."

Radio Requirements

I read Meredith Saini's article about the future Air Transportation System with interest in the May/June 2010 *FAA Safety Briefing*. I would feel a great deal safer flying, if the FAA would make it a requirement that all aircraft in the system must have two-way radio communication capability and use it.

Charles Hohos

The only area of the National Airspace System where no radio communications are required is in Class G airspace. Currently, the regulations require two-way radio communications in Class A, B, C, and D airspace. Class E requires two-way radio communications if you are on an IFR flight.

FAA Safety Briefing *welcomes comments. We may edit letters for style and/or length. If we have more than one letter on a topic, we will select a representative letter to publish. Because of publishing schedules, responses may not appear for several issues. While we do not print anonymous letters, we will withhold names or send personal replies upon request. If you have a concern with an immediate FAA operational issue, contact your local Flight Standards District Office or air traffic facility. Send letters to: Editor, FAA Safety Briefing, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591, FAX (202) 267-9463, or e-mail SafetyBriefing@faa.gov.*

SUSAN PARSON

Editor's Runway

Sim Stories

Unless I win the Powerball® lottery or figure out how to make my mortgage payment go away, my economic ability to power up an aircraft and accelerate the accumulation of aeronautical experience will continue to be limited for the foreseeable future. But, though most of us may never be able to fly airplanes as much as we would like, the advent of smart phones, apps for everything, and hi-fi simulation technology has provided an incredible range of affordable ways to maintain and enhance proficiency.

Hold On!

When I was working on my instrument rating in the early 1990s, smart phones were still the stuff of Star Trek, and the Internet was still mostly a gleam in someone's eye. My trusty home computer, though, could run whatever version of Microsoft® Flight Simulator was hot back then. So, I started using it to practice certain instrument procedures between lessons.

With the purchase of add-on software for the Washington, DC, metropolitan area, I suddenly had a dirt-cheap way to dramatically increase my proficiency in the dark art of holding-pattern entries and other instrument-procedural skills. It became my habit to use Flight Simulator to re-run my weekend flying lessons every day when I got home from work. In addition to rehearsing the lesson as I had flown it in the airplane with my instructor, I practiced holding and instrument procedures at other local airports. The cost was minimal, and the benefit to developing my understanding and proficiency between lessons was, as the commercial says, "priceless." Also priceless was making my instructor wonder how on earth I could make so much progress with so little time in the airplane, but that can be our little secret, right?

Move It!

The quality and capability of today's flight simulation "games" for home computers, smart phones, and ultra-portable netbook and tablet devices are light-years beyond the green-screen versions that helped me become a proficient instrument pilot. There is much you can learn from them—tips follow below—but today's general aviation pilots are also blessed by the birth of remarkably realistic training devices (colloquially called "simulators," even though the term accurately applies only to certain high-end devices). The combination of high-quality graphics, large wrap-around screens, and cockpit-like enclosures can generate a very realistic training experience even without movement.

However, affordable training devices that provide some limited motion have burst onto the GA training and proficiency landscape in the last year or two. Available at a fraction of the cost you pay these days for an hour in even the most modest GA aircraft trainer, these devices can all help you learn and master procedures as well as develop or maintain instrument proficiency in a very cost-effective way.

Caution Lights

As with everything else in aviation (and life), proper use of these tools is important. Training devices with super-sized screens, gee-whiz graphics, and motion are usually confined to school facilities and flown with instructors who can keep pilots on the proper path to proficiency. I used to shudder, though, when brand-new students bragged about having logged 2,000 hours in Flight Simulator because that sometimes meant that I had 2,000 hours of faulty learning to fix. The key to success with home-simulation devices—whether housed on your PC, your smart phone, or your iPad—is to use them first to practice and reinforce the lessons learned with your instructor. You can branch out to self-created scenarios as your understanding and skills develop.

Whether in a training device or an airplane, keep working for safe flights and happy landings!

Susan Parson (susan.parson@faa.gov) is a Special Assistant in the FAA's Flight Standards Service. She is an active general aviation pilot and flight instructor.

JAMES WILLIAMS

FAA Faces

Just Fly the Airplane

"We're getting away from the basics," says Steve Moore. "All of today's improvements are great and should improve safety. Yet, let's not forget where we came from.

"Our first task is still to fly the airplane."

Moore knows what he is talking about. A long-time pilot and an FAA general aviation principal operations inspector with the North Florida Flight Standards District Office in Orlando, Florida, Moore is a passionate GA pilot.

He first soloed in 1974 at the age of 17. Growing up near Canton, Ohio, Moore knew from an early age that he wanted to fly. "Both my parents were pilots," Moore explains. He was already interested in flying so when a friend invited him to join him at the airport, "It was $5 for the instructor and $15 for an old Cessna 150 so I said, 'sign me up.'"

From that Cessna 150 Moore moved on to fly Cessna 172s, Piper Arrows, and the J-3 Cub. He quickly turned to flight instruction earning his CFI three years after he first soloed. "Most of my flying career has centered on flight training," Moore says. "I continued instructing when I moved to Orlando in 1984. In 1991, I joined Comair Aviation Academy (now Delta Connection Academy) and eventually became the director of training."

As director of training, Moore was responsible for an operation that comprised about 550 students, 125 instructors, and 110 aircraft spread across three campuses. While at Comair, Moore became active in what is now the FAA Safety Team (FAASTeam). "I spoke at many events, including Sun 'n Fun, on GA safety issues," Moore explains. "I wanted to support the FAASTeam's vital role in this country's outstanding aviation safety record."

Moore's FAA career began in 1998 when he became a Principal Operations Inspector assigned to several part 141 flight schools and part 135 air carriers. Moore later became the FAA Training Center Program Manager for Embry-Riddle Aeronautical University and SimCom Training Center in Orlando.

Training is never far from Moore's mind. "The best thing any GA pilot can do is to keep learning.

Photo courtesy of Steve Moore

You can never know too much about aviation," Moore adds. "It includes everything from reading manuals, talking to other pilots, and getting a new rating. It's about working toward being a better, safer, more competent pilot."

Moore has remained in training as an instructor and check pilot for the FAA Flight Program in the Beechcraft *King Airs* the agency uses for its inspectors to maintain currency. It was that involvement that took him to an earthquake-ravaged Haiti earlier this year. "I was asked to reposition one of the FAA's *King Airs* to Santo Domingo, Dominican Republic. For two weeks we flew FAA personnel and supplies into Port-au-Prince to help the Haitian government with airport and airspace logistics problems. In that time, the airport went from 17 operations a day to over 200."

Moore sees the biggest challenge ahead for GA is to keep in touch with the skills that make us pilots while taking advantage of new technology. "ADS-B is great," he says. "Let's go forward [with technology], but not forget where we came from."

Be as proficient as you can in your primary aircraft, Moore advises. "But, also try something new, like flying a glider or a tailwheel aircraft. These are good experiences to improve your basic flying skills."

A career in flight training has taught Steve Moore that the first lesson of aviation is just as critical in today's age of ADS-B and glass cockpits as it was in the days of the Wright brothers: "Let's just fly the airplane."

James Williams is FAA Safety Briefing*'s assistant editor and photo editor. He is also a pilot and ground instructor.*

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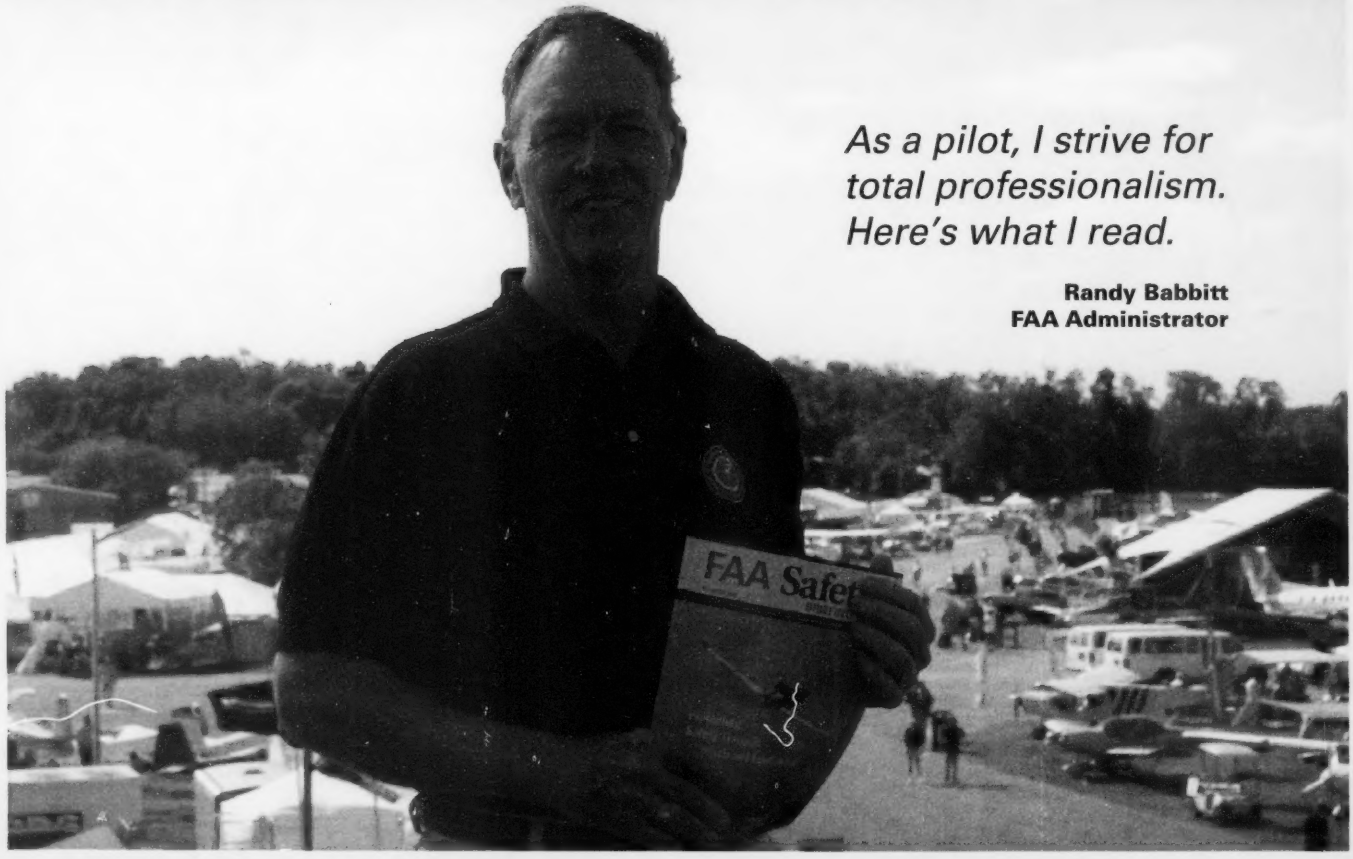

As a pilot, I strive for total professionalism. Here's what I read.

Randy Babbitt
FAA Administrator